City of Cambridge.

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THE

# MAYOR'S ADDRESS

AT THE

ORGANIZATION OF THE CITY GOVERNMENT,

AND THE

# ANNUAL REPORTS

MADE TO

THE CITY COUNCIL.

CAMBRIDGE:
Printed at the Riverside Press.
1872.

# CITY OF CAMBRIDGE.

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In Common Council, *January* 17, 1872.

Ordered, That twelve hundred copies of the Mayor's Inaugural Address, together with the Annual Report of the Committee on Finance, made to the last City Council, with the accompanying documents, and such other documents as have been ordered to be printed by the City Council, be printed, under the direction of the City Clerk, for general distribution.

Sent up for concurrence.

Attest: J. W. COTTON, *Clerk.*

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In Board of Aldermen, *January* 17, 1872.

Concurred.

Attest: JUSTIN A. JACOBS, *City Clerk.*

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*January* 19, 1872.

Approved.

HENRY O. HOUGHTON, *Mayor.*

# MAYOR'S ADDRESS.

Gentlemen of the City Council: —

With gratitude to the beneficent Ruler of the universe, that neither fire, pestilence, or contagious disease, nor any other dire calamity, has been permitted to devastate our beloved city during the year just passed, and joining with humility and sincerity in the invocation just offered for His blessing and protection, we enter upon a new year of our municipal duties and labors.

In accordance with a custom already established, I propose briefly to review the several topics which are likely to occupy your attention during the coming year, offering such suggestions and recommendations as may occur to me. Untried as I am in such service, and with only the knowledge that I am able to glean from the published and unpublished Reports, I shall make suggestions with diffidence; but with all the more assurance, from the fact that I see before me, associated with me in the administration of the city government, leading citizens, representing different localities and interests, and all having both property and character at stake, with no other object except to enhance the prosperity and still further build up the good name of our honored city; confident, as I am, that whatever questions are submitted to you

will be thoughtfully considered, and decided as shall be most for the welfare of the city, whether in accordance with or in opposition to my recommendations.

## FINANCES.

The Finances, from their importance, are usually the leading subject for discussion in the Mayor's Address, as they are a subject of vital importance to all the tax-payers. They possess more than usual interest at the present time, from the fact that they were freely discussed during the canvass preceding the election of the present City Council. It is not my purpose or desire to convict any one administration of extravagance or unnecessary expenditure, or to hold up any other as a model for imitation. I propose to lay before you such facts, which can be verified by reference to the city documents, as will illustrate the comparative valuation, population, receipts, and expenditures during the last ten years, namely, from the year 1862 to 1871 inclusive, referring you to the Report of the Finance Committee for a full statement of the finances for the year 1871.

But I am met at the very threshold of this comparison, by the absence from the official records of one of its most important elements. The Revised City Charter, § 17, requires that the City Council shall publish a schedule, once in each year, of the property and debts of the city. But I find that although this requirement of the Charter has been complied with in every other respect, there has been no schedule of property since 1864. Therefore while we can make a formidable array of the expenditures of

the city, and exhibit the magnitude of the debt, we cannot decide with authority whether this money has been well or ill spent, or whether we have full value received in real or personal property. Exception, however, should be made of the Water Works, to the account of which all moneys borrowed or expended for their benefit have been duly charged, and to whose credit are passed all the receipts and a rapidly increasing sinking fund, amounting already to nearly ten per cent. of the whole debt, showing the works to be in a highly prosperous state. But more of this in its proper place.

To proceed: I propose to append to this address, when printed, carefully prepared tables, furnished by the City Auditor, showing for each year for the past ten years, the valuation, rate of taxation, the city, state, and county tax, and the increase of tax over the preceding year; also expenditures for the same period for city purposes, including payments on City Debt, and the state and county taxes, together with the income from all sources other than taxes and loans; also a statement of the City Debt.

From these tables it will appear that our City Debt, including Trust Funds and Water Loan, has increased from $224,592 in 1861, to $1,881,400 in 1871. Of this amount $938,400 have been absorbed by the Water Works. The balance of this loan has been appropriated to the building of school-houses, purchasing real estate, widening and repairing streets, building sewers, and general expenses of the city; but how much specifically to each, I am unable to say. Whether we have value re-

ceived we can only tell when we get the schedule of the value of the property required by the charter. I respectfully suggest that this matter receive the attention of the Committee on Finance.

The expenditures for city purposes, including state and county taxes and payments on City Debt, have increased from $491,297.46 in 1862, to $1,352,099.56 in 1871, and the income from all sources other than taxes and loans, from $47,039.26 in 1862, to $383,114.86 in 1871, while the valuation has increased in the same period, from $21,527,100 to $46,859,800; but the valuation for 1871 does not include bank stock, which exceeds in value $1,750,000. The rate of taxation has increased during this period, not regularly, but intermittingly, from $10 on $1,000 in 1862, to $15.60 in 1871, while the population of the city has increased from 26,060 in 1860, to 39,650 in 1870. But it is a fact worthy of notice, that of this increase 10,536 have been added in the half decade from 1865 to 1870, showing conclusively, what was patent to the most superficial observer, that the tide of population is now setting toward our city in full flow, and it becomes us as a city government to place no barriers in its way.

During the year 1871, the

| | | |
|---|---|---|
| Total Appropriations were . . . . . | | $1,362,037.06 |
| Total Expenditures from Appropriations . . . | | 1,263,417.16 |
| Original Appropriations . . . . . | | 1,105,037.06 |
| Added for Streets and Paving . . | $100,000.00 | |
| Added for Police Court Room, etc., Ward One . . . . . | 12,000.00 | |
| Added for Fire Department . . | 15,000.00 | |
| Amounts carried forward . . . | $127,000.00 | $1,105,037.06 |

| | | |
|---|---|---|
| Amounts brought forward . . . | $127,000.00 | $1,105,037.06 |
| Added for West Boston and Cragie's Bridges . . . . . | 90,000.00 | |
| Added for Extension of Water Works | 40,000.00 | |
| | | 257,000.00 |
| Total . . . . . | | $1,362,037.06 |

LOANS CREATED.

| | | |
|---|---|---|
| Water Loan . . . . . | | $50.000.00 |
| Water Loan, Additional $40,000.00 (not negotiated) | | |
| City Loan, Permanent Improvements | $145,000.00 | |
| City Loan, Streets and Paving . . | 100,000.00 | |
| City Loan, Police Court Room, etc. . | 12,000.00 | |
| City Loan, Fire Department . . | 15,000.00 | |
| City Loan, West Boston and Cragie's Bridges . . . . . | 90,000.00 | |
| | | 362,000.00 |
| Total Loans . . . . . | | $412,000.00 |
| Paid of City Debt (including $3,000.00 of 1870) . | | 113,000.00 |
| Increase of City Debt (including Water Loan) during the year . . . . . | | $299,000.00 |

WATER WORKS.

I desire to call your attention to the very intelligible and satisfactory Report of the Water Board, and those of the Superintendent and Registrar accompanying it. It is only within a recent period that the necessity for water for private houses and manufactories became serious, not to say alarming; and, long after the present Water Works were established by private enterprise, the supply was so irregular and uncertain as to prevent business men and householders from availing themselves of its advantages, while at present the supply is unfailing and regular, and its value in enhancing the growth and prosperity of our city cannot be over-estimated. It is a significant coinci-

dence, that the great influx of population into our city commenced the same year (1865) that the city purchased the Water Works. While great credit is due to those gentlemen to whose foresight the necessity of an abundant supply of pure water for the city was apparent, and who were willing to risk their fortunes in its attainment, yet it is equally evident that the supply of water is so much a public benefit, that no private interest ought to come in competition with it; and the City Council has shown its wisdom in intrusting its management to individuals chosen from among its most honored citizens, who receive no other compensation, than a consciousness of being instruments of doing the public a great benefit, — the best of all rewards. The Water Board have also shown their sagacity in choosing for Superintendent a gentleman who is thoroughly identified with the best interests of Cambridge; who has been an efficient and valuable member of the City Government, and who brings to his duties great practical knowledge and experience.

The Trustees of the Sinking Fund of the Water Works, in view of the rapid increase of the fund, suggest that the City Council consider the expediency of reducing the water rates; and state that such extensions are now in contemplation as make it probable that the few streets in the city not now furnished with water-pipes, will soon be, and that an addition to the stand-pipe will be made, sufficient to supply residents on our highest grounds, and give a head of water to the fire-engines which will be of great advantage. New pumps, capable of discharging 5,000,000 gallons in twenty-four hours, have already been ordered.

## STREETS.

The expenditures in this department for the last year have been $244,664.46. Our situation, and the nature of our soil, are such as to make the care of our streets one of peculiar difficulty. We must either submit to the disadvantage of poor streets, or make large expenditures. My own impression is, that the public generally favor the liberal expenditure, but with proper limitations and conditions. Few will question, I think, that the brick sidewalk from Harvard Square to West Boston Bridge was a great public improvement, but it may have created a disposition to overdo the matter in other directions; and if a majority of the abuttors on any street object to having their estates thus improved, I see no reason why the improvement should be forced upon them.

The question of suitable material for repairing the streets is likely to come before you again this year, and I bespeak for it your careful consideration, as well as for the recommendations of the Superintendent with reference to paving and new sidewalks, and the watering of the streets. My impression is, that the present system of watering is satisfactory neither to the city nor to the contractors.

Complaint has sometimes been made of the Superintendent of Streets, that he leads the City Government into extravagance. I beg the City Council to bear in mind that this officer, and all others elected by the City Council, are appointed by ourselves, and are responsible only to us, while we are responsible to the public. The

Superintendent has not the authority to spend one dollar without we order it, and if he were not ready to make suggestions of improvements when needed, he would not be an intelligent public servant, and would be unworthy of your confidence. I have never heard of his being unfaithful to his duties, whenever instructed by the City Council. In the case of a public officer who, perhaps, more than any other, is necessarily brought into contact with our citizens, it might be well to inquire if he is not as often sinned against as sinning. His duties lead him so often to come in conflict with private interests, as to make mutual forbearance between himself and the citizen a virtue which there is abundant opportunity to cultivate.

## SEWERS.

The total length of sewers built from November 30, 1870, to November 30, 1871, is 12,622.35 feet, or 2.39 miles, at a cost, including care and repairs, etc., of $35,-286.24, less by $4,713.76 than the appropriation, which was $40,000. The total length of sewers and drains in the city is 192,566 feet, or 36.47 miles, constructed at a cost of $309,014.16; but this does not include some sewers within the streets which have been built by private parties. For the last three years the appropriations have exceeded the actual expenditures by $29,415.96, a gratifying result since the tendency is usually the other way. The sewers for the past year have been mostly built by contract, under the superintendence of the City Engineer. This method is probably the most economical, and the work has been done in a satisfactory manner.

In a city like ours, few, if any, will question the necessity of sewerage, or of having sewers constructed upon a comprehensive and general plan. But so many private rights are interfered with, and there are so many conflicting interests, as to make the duty of laying the assessments one of great delicacy and difficulty. This is peculiarly the case with the Oxford Street sewer, the largest and most expensive ever built in this city, which from its great length and peculiar situation affects a large number of citizens, and presents many new and difficult questions for decision. The Committee on Sewers and Drains of last year obtained an opinion from eminent counsel, Judges Curtis and Hoar, on the proper method of making these assessments, and, I have no doubt, have given the matter as careful and patient attention as the circumstances of the case would admit. But the whole matter has been referred to the present Board of Aldermen. And while the questions likely to arise will be difficult and vexatious, I trust that a patient hearing, with a careful consideration of the principles of law applicable to such cases, will enable you to settle the matter equitably and to the general satisfaction of all the parties interested, and by so doing, fix a rule that will be applicable to all future cases.

In this connection, I beg leave to call your attention to the recommendation, in the City Engineer's Report, for sewers to be constructed during the ensuing year, especially to the necessity of a sewer in the lower section of Harvard Street, and the subject of drainage into Miller's River.

## BRIDGES.

The bridges of the city are represented by the City Engineer, whose duty it is to inspect them annually, to be generally in good condition, with the exception of the River Street Bridge, Prison Point Bridge, and the Court Street Bridge, all of which will need the early attention of the Committee on Roads and Bridges. Extensive improvements have recently been made on the West Boston Bridge, to the great comfort of all travellers across it; but the cumbersome and unwieldy draw still remains, to "vex the righteous souls" of all who have to wait its slow movements. As this bridge and Cragie's Bridge are now under the charge of commissioners, nothing remains for the City Council to do in the premises, except to exercise the privilege accorded to all other good citizens, namely, to grumble until relief comes.

Hon. Ezra Parmenter, Commissioner for Cambridge of Cragie's and West Boston Bridges, reports that the city's proportion of the expenditures on these two bridges from June 1, 1871, to December 1, 1871, was $17,899.21. The draw of the West Boston Bridge has been opened from January 1, 1871, to December 1, 1871, 1,526 times, and that of Cragie's Bridge 3,552 times. He also states that plans and specifications have been prepared for widening Cragie's Bridge to conform to the width of Bridge Street, and for building a new draw at an estimated cost of $213,974.

## CITY ENGINEER'S REPORT.

I desire to call the careful attention of the City Council to the full and exhaustive Report of the City Engineer. In it will be found a detailed statement of all the improvements during the year in the construction and repairs of sewers; in the widening, extending, and opening of new streets, and, in addition to the repairs on the bridges, an historical account of each bridge, from its construction to the present time, together with suggestions of the highest importance with reference to the future welfare of the city. For a city located like ours, and growing so rapidly, the office of City Engineer is one of first importance, and cannot with safety be dispensed with. That the present incumbent brings to the discharge of his duties a knowledge and ability commensurate with the responsibilities of his office, I think no one will deny. The expenses of the office for the year, including salary of the Engineer, labor, and materials, have amounted to $6,867.42.

## FIRE DEPARTMENT.

I refer you to the elaborate report of the Chief Engineer of this department. He has held the office but one year, and represents the department as having been efficient, and maintaining a good deportment, with good feeling and a generous spirit of rivalry between the several companies. A new steam fire engine, at a cost of $4,500, three horses, at a cost of $1,150, and hose to the amount of $1,887.16, have been added to the

*materiel* of the department during the last year. The total expense of the department has been $44,948.73, $51.27 less than the original appropriation. There has been an unusually large number of alarms during the past year, amounting to eighty, and the estimated loss has been $127,300.

Complaint has been made, and I think justly, against permitting the firemen to take their engines from the city, for the purpose of attending what are called Firemen's Musters. There may be advantages in these gatherings, but they can scarcely overbalance the danger of leaving the city comparatively unprotected, the wear and tear of the machinery, and the risk of lowering the *morale* of the service. This custom of Firemen's Musters seems to be a relic of the volunteer system, and was, perhaps, justifiable under that system; but it is, therefore, entirely inconsistent with the present theory of a paid department, according to which a fireman is expected to be a man of character and skill in his profession, and paid accordingly. The duty is an arduous one, but tends to call forth some of the noblest traits of human nature, especially patience and courage. As the lawyer who strives to prevent litigation, or the soldier who tries most assiduously to cultivate peace, are of the highest type in their respective professions, so the fireman who adds to the patience and courage needed to combat a fearful conflagration, a thoughtful study of the causes that produce conflagrations, and points out the means of preventing them, is a public benefactor, and besides the sum he receives for his services, will be held in grateful esteem by

his fellow-citizens. Such a man needs no such rewards as parades and shows will give him.

### POLICE DEPARTMENT.

This department, including the chief, now consists of fifty persons, an increase of nine over last year, and has cost the city for the past year $57,988.73. Mr. Samuel M. Frye, represented as a valued and efficient officer, has died during the year. A new vehicle for carrying prisoners has been built, making an additional horse necessary for the department. Hand-stretchers have also been provided for moving injured persons; at Station Three a cell has been padded for the safer keeping of the insane; and a new lock-up provided on Norfolk near Cambridge street. The whole number of arrests has been larger the past year than the year before, being 1,835 against 1,695; those of minors alone have nearly doubled, being 298 against 155; while the arrests for drunkenness have increased from 788 to 936. I trust the cause of this lengthened criminal record will receive the consideration which its importance deserves.

The Chief of Police recommends, (1.) better accommodations for the Police Court, (2.) more suitable quarters for the police in the 2d District, and also the introduction of a dial telegraph connecting the several police stations with the City Hall. I forbear to make any recommendation with reference to either of these topics, until I have had an opportunity thoroughly to investigate them. The Chief also states that between the hours of six and nine in the evening and four and seven in the morning there

are but seven officers on duty throughout the city. To obviate this difficulty he suggests the employment of eight additional men on the regular force, or of a limited number of specials to serve from six to nine in the evening. I commend this suggestion to your careful attention.

It is perhaps only a truism to repeat that the duties of a police officer are such as require qualities of the highest character, — self-control, prudence, and unblemished integrity. He is not only the guardian of the property of the city, but of the citizen in his most unguarded moments, and of those who are unable to protect themselves. He is also more tempted to receive bribes than any other city officer, for individuals who defy the laws will not scruple to corrupt the guardian of the law if in their power. Our only remedy is in being careful not to appoint any person on the force upon whom there is a taint of suspicion in that respect, and should any officer be found guilty, even in the most indirect way, of accepting a bribe, he should not only be dishonorably dismissed, but visited with prompt and condign punishment.

## SANDERS TEMPERANCE FUND.

In connection with the police department a sense of duty leads me to speak of this fund. The city has accepted a fund of $10,000 from the estate of the late Charles Sanders, on condition that some worthy man shall be appointed "who shall be constantly employed as a missionary in the cause of temperance, in reforming old drunkards and preventing young drunkards, and

abolishing as far as possible the use of all intoxicating articles." I would respectfully suggest to the City Council the inquiry, whether we should not more fully execute our trust in the spirit if not in the letter, by appointing a discreet and worthy man as truant officer for the whole city, whose duty it shall be also to attend to the duties prescribed by this bequest, and to report, like other truant officers, to the Chief of Police, and thus pass the income of this fund to the credit of the police department. Such an arrangement would apply the fund directly to the purpose intended by the donor, and the records of the police department would show each year just what had been accomplished, and the City Council could not then be justly accused of having put the matter out of its own control. This course also might have a tendency to elicit the cause and abbreviate the lengthening roll of arrests for drunkenness and the offenses of minors which appears in the Reports of the Chief of Police.

### THE DOWSE INSTITUTE AND DANA LIBRARY,

Under the enlightened management of their respective Boards, continue to furnish amusement and instruction to our people, the value of which socially and morally can scarcely be estimated. I learn with pleasure that the Trustees of the Dana Library have secured an additional room to be used as a reading room, which will still further extend its usefulness ; and the new Union Hall, when completed, will afford more ample accommodation than

formerly for those who desire to attend the Lectures of the Dowse Institute.

### CAMBRIDGE CEMETERY.

The Report of the Commissioners of the Cemetery presents a very favorable financial statement, showing a balance of receipts over expenditures in 1871 of $2,994.89 against a deficit in 1870 of $5,079.71. This is not owing to any increased mortality among us, but to the fact, in addition to the rapid increase of our population, that many of our citizens are turning their attention to this cemetery as a desirable place for family lots; and during the last year many lots of small size have been prepared, of which there has been great need. During the past year a substantial fence has been built on the northern boundary of the grounds, and the grounds themselves have been kept in their usual good order. The Commissioners express their great satisfaction with the services of the Superintendent.

### THE ALMSHOUSE.

This institution has not been as prosperous during the past year as could be desired. It has a building more fitted for a State House than an Almshouse; but with a farm of thirty-seven acres, including a valuable and profitable ledge, with no interest or rent account, and with such unpaid services as the inmates themselves are enabled to afford, the actual expenses, including outside assistance, for the year 1871, over and above the receipts, have been $18,031.20, being an increase of $2,407.09; while, in ad-

dition, the value of the personal property has decreased during the year $6,346.06. While the net expenses at the house have been reduced about $1,000, there has been great increase in what is called outside assistance, amounting the past year to $10,481.42. The number of inmates has averaged 74, one less than during the previous year.

The piggery does not seem to have been prosperous for the last year, a remarkable mortality having taken place among the swine, while the price of such property has declined during the year, until it is worth less than half what it was a year ago. For this reason, and the additional one that it does not seem to them consistent to keep pigs, while the City Government denies to its citizens the right to do the same thing, the Overseers of the Poor have decided to abolish the piggery altogether. As this decision involves the question of the collection and disposal of house offal, and may lead to new and expensive experiments in other directions, I trust it was taken after due consideration. Pork, if cheap now, may be dear next year; and the question of consistency may be put to rest perhaps by the fact that the Almshouse estate is chiefly situated in the new city of Somerville, which has not yet, so far as I know, established an ordinance forbidding the keeping of swine. At any rate, I trust this matter may receive the earnest investigation of the Overseers of the Poor and the Committee on the Almshouse, and that some means may be devised by which this institution can be brought more nearly to a paying basis. I cannot escape the conviction that such

an estate, unencumbered, and so near a market, could be made more nearly to pay its current expenses, if owned by a private individual. One of my predecessors recommended the sale of the house and a portion of the land. I would renew that recommendation, provided a customer can be found. Everything at the Almshouse appears to be kept in the most scrupulous order, and there is no word of censure to be attributed to the Warden or Matron.

### SCHOOL COMMITTEE.

The Reports of this Board are not usually presented at the close of the year, as is the case with those of other Boards and Departments of the City Government, thus making it practically impossible for the incoming administration to make any recommendations to the City Council, based upon the suggestions of the Committee. I refer to this matter now, for the reason that the Report of 1870 complains in general terms of the difficulties and delays experienced under the present system, in obtaining efficient coöperation on the part of the City Council, in the matter of buildings, repairs, and general supplies. From a long experience as a member of the School Committee, and a shorter one in each branch of the City Council, I feel confident that this matter is overstated, to say the least. In my judgment there is nothing for which the people so willingly contribute, or for which the City Council so unhesitatingly appropriates money, as our public schools. As a proof of this, the appropriations the last year for instruction, salaries, etc., have been $109,791.65; and for new school-houses and alterations,

$141,109.63; making a total of $250,901.28. The wise men of Babylon might have interpreted the king's dream if he could have told it to them; but it required a prophet to tell the dream and interpret it besides. The members of the City Council claim no prophetic inspiration, but I feel confident that if the School Committee will make known their wants they will have no greater difficulty than any other Board in eliciting coöperation and adequate supplies. With a Superintendent supposed to be entirely conversant with the wishes of the Committee and the necessities of the schools, whose office is in this building, and who has free access to the committees of the City Council, it would seem that nothing more could be necessary to do away with all just cause of complaint, except that the School Committee should present their Report at the same time with other Departments, so that it may be referred to the appropriate committees, in the beginning of the year. If the tables of attendance, etc., need to include the whole month of December, these could be added as supplementary to the Reports of the Committee and the Superintendent.

So far as I can learn, in the absence of a Report, the schools are in their usually good condition. Within the past two years two new schools have been added to our school system, namely, the Training School and the Drawing School. This latter is authorized by act of the Legislature, and meets a want very deeply felt among all classes of the community. This is shown by the large numbers who attend the school and the interest mani-

fested by the pupils. As to the former, while I have no doubt that the Training School is under the care of competent instructors, and is of great advantage to those who avail themselves of its privileges, it not only adds to our already overburdened expenses the cost of instructors and school-house, but is in my judgment, after all, a strictly professional school, not required by statute, and I see no good reason for continuing it. Indeed, why should not each Department of the City Government require its training school as well? This would, of course, add largely to our expenditures, and there might be a scarcity of offices, in the gift of the City Council, for all aspirants, but we should get the benefit of the training for those we did take, and it would undoubtedly aid them in obtaining situations in less favored communities and cities which could not afford the expense of training them. While these schools may properly be instituted and supported by the State, it does not follow that they need be established by the cities and towns.

## CITY ORDINANCES.

Under the supervision of the efficient City Clerk the City Ordinances have been carefully revised, and re-enacted, and as only the index remains to be printed, they will soon be ready for the use of the City Council and the citizens. There are two comparatively new ordinances of a general nature which I trust will meet with the approval of the citizens, and a hearty coöperation with the police in securing their enforcement; namely, one forbidding the disfigurement of fences and buildings

with posters and handbills, and the other relating to the removal of snow from sidewalks.

At one of the last meetings of our predecessors the following order was introduced and passed both branches of the City Council, and, if I am not mistaken, with little if any debate: — "*Ordered*, That the Mayor be requested in the name of the City of Cambridge to petition the next Legislature for such legislation as shall secure an equalization of the burden resulting from the exemption from taxation of the property of educational institutions."

As the duty of executing this order will devolve upon the present incumbent of the Mayor's office, he would have been glad to have heard some discussion, of the desirableness of the legislation sought for, so that he might bring it intelligently to the notice of our Representatives in the State Legislature. It is true that our ancient University, under its present administration and with the aid of the munificent benefactions of its friends, has put on the appearance of vigorous youth, and is reaching forth her hands to take a large portion of our domain, and if she should ever go into the market to sell her lands she would have vastly the advantage, from her exemption from taxation, over the private landholder. But it may be answered, that she is never likely to do this; that she pays taxes on all property used for other purposes than educational; that she draws here, by the advantages she offers, wealthy people from all parts of the world, who make this their temporary or permanent home, and who not only buy real estate but pay

large taxes on personal property; that the lands she does not use she keeps as open commons, and beautifies and takes care of at her own expense, while the public share in the benefits, and all adjacent lands are enhanced in value. Besides, she pays her full share in all assessments for improvements, such as sewers and sidewalks; and has heretofore contributed to the support of the police and fire departments. For the reason that this order opens questions largely affecting the welfare of Cambridge, and is likely, if it comes to the Legislature, to open the whole question of the exemption of religious and educational institutions, I respectfully suggest that it be reconsidered, and referred to a committee who shall give opportunities for a hearing, so that we may avoid, if possible, any hasty legislation that we may have reason to regret in the future.

### ECONOMY AND IMPROVEMENTS.

I use these words as more clearly defining my idea of what is intended to be meant by the alliterative watchwords, Retrenchment and Reform, so often used at elections, and so freely employed at our own. Economy in the management of all affairs, both public and private, is absolutely necessary to secure the means to make improvements; and whenever these are demanded by an urgent public necessity, it is the poorest economy not to make them, if the means can be legitimately provided. The charter is very explicit in defining the duties of the Mayor. It says, that "he shall cause the laws and regulations of the city to be executed and enforced," and that

"he shall exercise a general supervision over the conduct of all subordinate officers, and cause their violation or neglect of duty to be punished." This, in my judgment, makes it a part of his duty to see that all receipts from whatever source find their way directly to the Treasury, and that no disbursements are made, however trifling, unless authorized by the proper authority, and that the vouchers shall express clearly and definitely for what the disbursements have been made; that no salary shall be paid to any individual except for authorized services rendered; that no employé of the city who receives a regular salary for his whole time, shall be allowed to receive any other payment or emolument whatsoever for services rendered from his office, except such fees as may be allowed by law or city ordinance. I am not intimating that any such practices exist; I am only defining what I conceive to be the duty of the Mayor in that regard. Again, in my judgment, all contracts awarded by the City Council should be given out after fair and open competition, reference always being had to the character and responsibility of the contractors.

This naturally brings me to the other part of my subject, namely, improvements. There seems to have been in the last two or three years in many of our cities what may be denominated a park epidemic, and Cambridge has not escaped its symptoms, although it has, so far, its ravages. Most, if not all our public parks have been given to the city by liberal and wealthy citizens, who by so doing have not only made their memories fragrant, but have in the most substantial way benefited their own estates.

I commend their example to those who are now trying to increase the number of our public parks. Our city is a magnificent park of itself, growing more beautiful every year by the embellishment secured by the combined and reciprocal influence of private wealth and public improvement. Even if we have to accept the curved line of beauty in place of the straight line of exact science, let us spare our ancient and historic trees, plant new ones in our streets, trim, water, and dress the parks we have, place fountains in them, if need be, and private enterprise will soon imitate our example, and make our goodly city, what it is fast becoming, the most desirable place for a residence in all our land.

There are several improvements that you will probably be called upon to consider during the coming year, and not one of the least important will be the extension of Walnut Street to River Street. This will not only enable the Cambridge Railroad Company to extend the location in Pearl Street, granted by the late City Council at its last meeting, through Walnut to connect with its tracks on River Street, but will open a more direct avenue from Old Cambridge to the Brookline Bridge, which is much needed.

Notice has already been given that the Legislature will be applied to at its ensuing session for charters for two steam railroads connecting Cambridge with Boston. One of these lines is to be a branch of the Boston and Albany Railroad, starting from Mount Auburn and running south of Mount Auburn Street, crossing the river at some point below the Brighton Bridge, and run-

ning through Brighton and Brookline into the Boston and Albany station. This road, if it crosses the river so as to run through Cambridgeport, will be likely to be of great value to the city. The other project is that of the Fitchburg Railroad to run a line from its main track in Somerville, through the city to unite with the track at Mount Auburn. Several of our prominent citizens will apply again this winter for a charter for a horse railroad from Porter's Station through Beacon and Hampshire Streets to Broadway, to enter Boston over the tracks of the Union Railway Company. I trust these several projects will receive that consideration from you which their importance demands. We are here not to legislate in the interest of any corporation or individual, but only for the public good. But unreasonable prejudice against individuals or corporations should not make us blind to the public interest.

The Legislature of 1869, at the request of the City Council, passed an act entitled "An act for the abatement of a nuisance in the city of Cambridge, and for the preservation of the public health in said city." This refers to the filling up of what is known as the Washington Street district. His Honor, Mayor Saunders, in his address for that year, called attention to the pressing necessity of this improvement, not only for its advantage in enhancing the value of a large territory, but as a sanitary measure. As chairman of the Committee on Health for that year, it became my duty in connection with that committee, to examine this locality, and urge upon the City Council the application to the Legislature, which

resulted in the passage of the act above alluded to. I did this heartily, with a strong conviction of its great importance to the future prosperity and health of the city. Our predecessors, among their last acts, — and only too tardily, for the privileges granted by this act expire in June, 1874, — have directed the necessary orders to be issued to the owners of the land as required by the first section of the act, which reads as follows: —

"The mayor and aldermen of the city of Cambridge may order the owners of the land in said city, or any of them, situated and lying within the district which is bounded on the northeast by Broadway, on the south by Main Street, and on the west by Moore and Gilpin Streets, to raise the grade of said land, filling up the same with good material to a grade not less than twelve feet above mean low water, with reference to a complete drainage thereof, and to the abatement of the present nuisance, and to preserve the health of the city."

If the owners fail to comply with such order within three months after the service of said notice, the Mayor and Aldermen are authorized to go on and raise the grade. Thus it will be seen that this project has passed the stage of discussion, and now demands vigorous and prompt action. For one I rejoice that it is so. However justly this region in the past may have been liable to the reproach of being the "abomination of desolation," it may fairly hope, in the future, not only by increasing the value of its land, but by the numerous manufactories and warehouses which its situation will necessarily invite, to rival "Fair Harvard" and add to the bulk as well as the area of taxable property, as much as she may be able to exempt, be she ever so aspiring in that direction.

Already the Grand Junction Railroad is beginning to feel the quickening pulse of business incident to its office of connecting all the great arteries of trade centering in Boston with deep water, while on its borders manufactories are springing up, with side tracks running into their premises, thus securing economy of freight and a practical nearness to all the markets of the country. I anticipate that at no very distant day this road will require two and even three tracks, which I trust will not be allowed to cross our main avenues at grade, and will be lined on either side by manufactories of the largest size. And if our sister city continues to have the prosperous growth she has had of late years, and the broad avenue, which is to connect our prosperity, not our destiny, with hers, shall be built in the right place, I see nothing to prevent the grand union depot of all the roads that centre in Boston from being located at no very distant day in the space southeasterly of this railroad between Brookline Bridge and Fort Washington.

Notice has already been given in the public prints of a petition to be presented to the next Legislature for authority to build an avenue and bridge from Front Street, Cambridgeport, to some point on Beacon Street, in Boston. I am not prepared to say whether the time has come for building such an avenue; but when the time does come I doubt very much whether the location proposed is the best one. If the Cambridge terminus of this bridge should be located at or near Fort Washington, and a straight line be drawn from thence to Putnam Street, entering that street near its junction with Main

Street, a glance at the map will show any one, I think, that Cambridge will have one of the most beautiful, picturesque, and direct avenues to Boston that could be well thought of, while the charming adjacent towns of Arlington, Belmont, and Watertown will share largely in its benefits. Besides, it would pass through and increase in taxable value a section of our city unequaled in situation, soil, and general healthiness, for private residences. While the Front Street project only seeks to reclaim the flats for private dwellings, the Washington Street improvement will make a demand for buildings for business purposes, in all this neighborhood. The other territory mentioned only needs ready access to Boston, which would be given by the new route proposed, to make it the most desirable for residences in all the vicinity.

As I have intimated several times, it has not been my purpose to recommend or oppose any of the projects which I have sketched above, and I might have increased the catalogue; but my purpose has been simply to call the attention of the City Council and the citizens of Cambridge to the various improvements suggested, trusting that they may receive such consideration and discussion, not only in the City Council, but through the public press and throughout the community, as will make our way plain before us.

In one particular, however, I desire to depart from the plan proposed to myself, and heartily second the recommendation of the Water Board, that a driveway be built around Fresh Pond, to be constructed from the material

which it is desirable to remove from the pond itself, and from the gravel found on its borders. From the earliest time to the present, the well which furnished the tribe or family with pure water has been an object of solicitude and care. Now, Fresh Pond is the city's well, and not single tribes or families are dependent upon its purity and supply, but an ever increasing population. It is naturally so situated as to take the drainage, and hence the filth, of all the estates now on its borders, or that will be in the future. Only a portion of the land surrounding it is within the boundary of Cambridge, and hence it is liable to the nameless defilements caused by multitudes of loungers and vagrants, who cannot be brought under the control of the police force of Cambridge. On the other hand, the beauty and picturesqueness of the drive would attract visitors from all quarters, combining, as it would, all the advantages of a park with the ever changing beauty of a water view. This very publicity would of itself be a sufficient protection from the disgusting abuses at which I have hinted above, besides putting the whole circuit of the pond under observation and control, while a sewer might be laid through the avenue which would carry all the drainage of the surrounding country into the outlet of the pond, and thus secure a purity of water which could not be secured in any other way. Besides, the value of the estates on the border of this avenue would be increased in value to such an extent, that the abuttors could well afford to pay a large portion of the expense; and I learn that the largest owner has already expressed a willingness to that effect, while our

Water Works are so prosperous as to justify increasing the debt for that purpose, if not using a portion of the income.

CONCLUSION.

*Gentlemen of the City Council*, — The contest at the last municipal election, like that of the previous year, was not entered into by the citizens of Cambridge for or against any particular individual or individuals; but it was an assertion of the right, on their part, to a voice in the primary meetings, as well as their determination to exercise their right of suffrage untrammeled at the polls. It was the same spirit which stirred our Revolutionary ancestors to resist, not the odious tax, for that had been abolished, but the asserted right on the part of the King and Parliament to tax them. And more recently, when the flag of our country was fired upon at Fort Sumter, in defiance of the Constitution and the laws, it was the same spirit that brought a whole nation to its feet in their defense, producing the sublimest spectacle of the century. And it is well that men should be both sensitive and jealous of their right to exercise the duties of freemen in opposition to all combinations of individuals or parties, when we see to what degradation a neglect to do this simple duty has brought the chief commercial city of the Union; when we see members of Congress elected in the interest of great monopolies, and neglecting the interests of their constituents; when we see even in the highest legislative hall of the country the leaders of a great historic party only induced to allow a committee of investigation to be appointed, in the face of unblushing malfeasance in office,

by the indignant eloquence of those in whom the sense of justice and right was more powerful than party discipline.

For the members of the City Council of 1871 I think we all entertain sentiments of the highest esteem, and we are proud to include a goodly number of them in the Council of 1872, and that we should have willingly taken the risk of losing any only shows the strength of the convictions of the citizens of Cambridge that the primary meetings must be absolutely free from the dictation and control of individuals, or combinations of individuals, if they wish their nominations to be ratified at the polls.

For the honor of being elected to the chief executive office of the City of Cambridge, I am profoundly grateful to my fellow-citizens. It is well known to you that the office was not sought by me, but rather that I sought to avoid the nomination. I have lived nearly a quarter of a century in this city, and have never held a strictly political office. The only service I have ever been called upon to render, has been on the School Board and in the City Council, and the record of that service is known to you. Throughout our broad land are scattered cities and towns which possess special advantages over our own in wealth, population, beauty of situation, and in many other respects, but nowhere can one be found which combines, in such harmonious proportion, all the elements — material, social, literary, and religious — which go to make up the ideal of a comfortable and happy home after the true New England type. Upon us, as the guardians of our city, is devolved the duty of seeing that all our people are permitted to enjoy these homes in peace and

quietness during the coming year, and that our beloved city receive no check to her prosperity or blemish on her beauty. As the Roman Consul could proudly point to his little son as a guarantee of his loyalty to the republic, so I can only say that my home is here, and that no inducements of profit, or promises of prospective advantages, however flattering, have ever inclined me to remove it; and loving that as I do, it is the only evidence I have to offer that I shall try to discharge the duties of the high office to which I am called, in the fear of God, and to the satisfaction of my own conscience, trusting that, so far as I am permitted to succeed in doing this, I may secure the approval of my fellow-citizens.

HENRY O. HOUGHTON.

CAMBRIDGE, *January* 1, 1872.

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# APPENDIX,

## GIVING THE TABLES REFERRED TO IN THE PRECEDING ADDRESS.

### EXPENDITURES AND INCOME FOR TEN YEARS.

| | EXPENDITURES 1862-1871, FOR CITY PURPOSES, INCLUDING PAYMENTS ON CITY DEBT, AND STATE AND COUNTY TAXES. | INCOME FROM ALL SOURCES OTHER THAN TAXES AND LOANS. |
|---|---|---|
| 1862 | $491,297.46 | $47,039.26 + $20,000.00 Bridge Fund. |
| 1863 | 408,405.96 | 114,786.47 + 27,000.00 " " |
| 1864 | 678,649.85 | 293,964.61 + 24,000.00 " " |
| 1865 | 673,679.72 | 280,388.85 + 41,000.00 " " |
| 1866 | 676,541.21 | 339,995.64 + 11,014.35 " " |
| 1867 | 797,298.92 | 244,336.72 |
| 1868 | 729,602.42 | 291,653.46 |
| 1869 | 867,623.42 | 308,903.04 |
| 1870 | 1,064,190.59 | 333,801.16 |
| 1871 | 1,352,099.56 | 383,114.86 |

## VALUATION AND TAXATION, 1862–71.

| Year. | Valuation. | Rate of Taxation.† (Less 4 per cent. if paid by October 10th.) | City Tax. | State Tax. | County Tax. | Total Tax. | Increase of Tax over preceding year.‡ |
|---|---|---|---|---|---|---|---|
| 1862. | $21,527,100 | $10.00 | $169,974.72 | $40,068.00 | $16,464.28 | $226,507.00 | 5 per cent. |
| 1863. | 22,549,200 | 11.00 | 189,702.92 | 53,424.00 | 16,464.28 | 259,591.20 | 14 " |
| 1864. | 23,271,500 | 11.50 | 210,969.23 | 53,424.00 | 16,463.89 | 280,857.12 | 8 " |
| 1865. | 26,085,900 | 15.00 | 267,724.60 | 118,487.00 | 18,280.90 | 404,492.50 | 44 " |
| 1866. | 28,385,700 | 13.20 | 293,562.40 | 75,630.00 | 20,044.84 | 389,237.24 | 4 " decrease. |
| 1867. | 31,853,500 | 15.20 | 351,282.98 | 126,050.00 | 22,450.22 | 499,783.20 | 28 " increase. |
| 1868. | 34,093,800 | 13.80 | 413,214.43 | 50,420.00 | 23,252.01 | 486,886.44 | 3 " decrease. |
| 1869. | 39,210,900 | 14.00 | 478,136.10 | 63,025.00 | 26,657.50 | 566,818.60 | 16 " increase. |
| 1870. | 43,097,200 | 14.00 | 533,544.40 | 63,025.00 | 25,647.40 | 622,216.80 | 9 " " |
| 1871. | 46,859,800* | 15.60 | 660,000.00 | 63,025.00 | 25,657.40 | 748,682.40 | 20 " " |

* This valuation of $46,859,800 does not include Bank Stock, — which exceeds in value $1,750,000.

† Average for ten years $13.33.

‡ Average annual increase in 10 years, 13 7-10 per cent. Average annual increase for last 2 years 14½ per cent.

## STATEMENT OF THE CITY DEBT, 1861–1871.

| Year. | Debt Dec. 1st, including Trust Funds and Water Loan. | Trust Funds. | Water Loan. | Debt contracted during the year. | Debt paid during the year. | Increase of the Debt. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1861 | $224,592.00 | $10,000.00 | $50,000.00 | | | | |
| 1862 | 444,692.00 | 16,000.00 | 50,000.00 | $244,000.00 | $23,900.00 | $220,100.00 | Draft of $1,000, dated 1862, paid in 1863. |
| 1863 | 533,848.00 | 24,156.00 | 50,000.00 | 185,156.00 | 96,000.00 | 89,156.00 | |
| 1864 | 760,348.00 | 27,656.00 | 50,000.00 | 251,500.00 | 25,000.00 | 226,500.00 | |
| 1865 | 965,092.00 | 25,000.00 | 291,400.00 | 91,000.00 city.<br>241,400.00 water. | 127,656.00 | 204,744.00 | |
| 1866 | 871,092.00 | 25,000.00 | 391,400.00 | 100,000.00 " | 82,000.00 | 18,000.00 | $112,000, notes of bridge fund, herctofore included in the city debt, canceled. |
| 1867 | 1,013,400.00 | 25,000.00 | 541,400.00 | 150,000.00 " | 7,692.00 | 142,308.00 | |
| 1868 | 1,188,400.00 | 25,000.00 | 716,400.00 | 175,000.00 " | – | 175,000.00 | |
| 1869 | 1,300,400.00 | 25,000.00 | 828,400.00 | 112,000.00 " | – | 112,000.00 | |
| 1870 | 1,582,400.00 | 25,000.00 | 888,400.00 | 60,000.00 "<br>215,000.00 city.<br>7,000.00 wharf. | 3,000.00 | 282,000.00 | Draft of $3,000, dated 1870, paid in 1871. |
| 1871 | 1,881,400.00 | 25,000.00 | 938,400.00 | 50,000.00 water.<br>362,000.00 city. | 110,000.00 | 299,000.00 | Draft of $3,000, dated 1870, paid in 1871. |
| | | | | | | $1,768,808.00 | Increase of debt in ten years. |
| | | | | | Less | 112,000.00 | Notes of bridge fund canceled in 1866. |
| | | | | | | $1,656,808.00 | Actual increase in ten years. |
| | | | | | Less | 938,400.00 | Water loan, to be paid by sinking fund. |
| | | | | | | $718,408.00 | Increase of debt, exclusive of water loan. |

# ANNUAL REPORT

OF

# THE COMMITTEE ON FINANCE.

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The Joint Standing Committee on Finance submits, respectfully, its Annual Report to the City Council.

Early in the year the City Council appropriated the sum of $1,105,037.06 to defray the expenses of the government for the financial year. Subsequently, there were added sundry sums amounting in all to $257,000, which were provided for by a City Debt. Thus the

| | |
|---|---|
| Total Appropriations for 1871 were . . . . . | $1,362,037.06 |
| Total Expenditures under the Appropriation Bill | 1,263,417.16 |
| Balance unexpended . . . . . | $98,619.90 |

The total expenditure under the Appropriation Bill exceeds that of 1870 by the sum of $287,898.97. This excess is accounted for by the following items, without reference to others which might be named: —

| | | |
|---|---|---|
| Payment of City Debt . . . . . | $113,000 | |
| Increase of expenditure on Streets . . . . | 47,000 | |
| " " " " School Houses . | 83,000 | |
| " " " " Police . . . . | 15,000 | |
| " " " " Public Instruction | 5,000 | |
| " " " " Almshouse . . . | 2,600 | |
| Purchase of gravel bank . . . . . | 22,000 | |
| | | $287,600 |

There was a large expenditure ($83,000) on West Boston and Cragie Bridges, but this was nearly offset by a diminution, as compared with 1870, of expense on sewers of about the same

amount. Other expenses are, of course, constantly increasing, and must necessarily continue to increase as the city becomes more populous.

### RECEIPTS AND EXPENDITURES.

| | |
|---|---|
| The total Receipts at the Treasury for the year were | $1,752,675.87 |
| Balance on hand Dec. 1, 1870 . . . . . | 83,857.57 |
| | $1,836,533.44 |
| Total Expenditures . . . . . | 1,727,667.74 |
| Balance in Treasury, Dec. 1, 1871 . . . . . | $108,865.70 |

The estimates of receipts, made by your Committee last February, were, as the event has proved, very nearly accurate. The rapid increase in the receipts for water still continues; being this year $18,000 more than in 1870. The income from this Department has nearly doubled in four years, showing the wisdom and good policy of liberal expenditures for extending the Works, and putting them in complete order for use.

### SINKING FUND OF THE WATER WORKS.

| | |
|---|---|
| This Fund was, on June 30, 1870 . . . . | $59,266.72 |
| Added during the year . . . . . | 30,544.40 |
| Amount of Fund June 30, 1871 . . . . . | $89,811.12 |

The Fund is invested as follows: —

| | |
|---|---|
| Cambridge Water Bonds . . . . . | $77,951.00 |
| Temporary Loan to the City . . . . . | 11,860.12 |
| | $89,811.12 |

The Finance Committee of last year called attention, in their Report, to the fact that the Fund had increased in 1870 about $30,000, and remarked that "as this extraordinary increase was owing to extraneous causes, independent of the regular income of the Works, such an increase in a single year will not probably ever again occur." Such an increase has, however, occurred this year, and that too from no extraneous cause of any magnitude, but from the ordinary and usual sources of income. This great prosperity of the Works is exceedingly gratifying, giving as

it does good reason to believe that the whole Water Debt may be extinguished within a reasonable time.

### ANALYSIS OF THE CITY DEBT.

| | |
|---|---|
| Amount of Permanent Debt, Dec. 1, 1870, exclusive of the Dowse and Sanders Funds . . | $1,562,400.00 |
| Added in 1871: Water Bonds . . . . . | 50,000.00 |
| Cambridge City Bonds . . . . . | 300,000.00 |
| Notes of the City, due in 1874 . . . . | 62,000.00 |
| | $1,974,400.00 |
| Deduct City Debt paid in 1871 . . . . . | 113,000.00 |
| | $1,861,400.00 |
| Deduct Sinking Fund of the Water Works . . | 89,811.12 |
| Total, Dec. 1, 1871 . . . . . | $1,771,588.88 |
| Total, Dec. 1, 1870 . . . . . | 1,503,133.38 |
| Increase in 1871 . . . . . | $268,455.50 |
| Deduct Water Bonds issued in 1871 . . . . | 50,000.00 |
| Increase, exclusive of Water Debt . . . . . | $218,455.50 |

It should always be borne in mind that the interest on the Water Debt is provided for by receipts for the use of water, and is no burden upon the tax-payers. About one half the whole permanent interest account is thus provided for.

The entire indebtedness of the City may be classified as follows: —

| | |
|---|---|
| Trustees of the Daniel White Charity (payable on demand) . . . . . | $5,000.00 |
| Cambridge City Bonds . . . . . | 726,000.00 |
| " Water Bonds . . . . . | 938,400.00 |
| Sundry Notes of the City . . . . . | 192,000.00 |
| | $1,861,400.00 |
| Deduct amount of Water Bonds . . . . . | 938,400.00 |
| Balance, the interest on which is taxed directly to the people . . . . . | $923,000.00 |

The Debt bears various rates of interest, varying from five to seven per cent. per annum.

| | |
|---|---|
| Amount at five per cent. | $406,000.00 |
| " five and three fourths per cent. | 30,000.00 |
| " six per cent. | 1,325,400.00 |
| " seven per cent. | 100,000.00 |
| Total | $1,861,400.00 |

In the foregoing analysis, no account is made of the Dowse Fund, $10,000; and the Sanders Temperance Fund, $10,000; both of which are invested in the City's notes. It is required that the interest on both these amounts, $600 each, shall be annually appropriated to the objects designated. So long as this is done, the City is not to be called upon for the principal.

### INCREASE OF PERMANENT PROPERTY IN 1871.

| | |
|---|---|
| Fire Alarm Extension | $7,500.00 |
| Holmes Primary School House (finishing) | 3,900.00 |
| Willard Primary School House | 27,300.00 |
| Harvard Grammar School House | 33,000.00 |
| Washington Grammar School House (enlargement) | 12,500.00 |
| Gore Street Grammar School House | 24,000.00 |
| Spruce Street Primary School House | 3,600.00 |
| Total | $111,800.00 |

### LIABILITIES AND ASSETS, DEC. 1, 1871.

The liabilities of the Treasury are: —

| | |
|---|---|
| State and County Tax | $88,672.40 |
| Interest accrued, but not due | 55.56 |
| Bills approved, but not paid | 872.22 |
| | $89,600.18 |

Which we offset as follows: —

| | |
|---|---|
| Balance in Treasury | $108,865.70 |
| Due from State, under Corporation Tax Act | 30,000.00 |
| " " " Bank Tax Act | 15,000.00 |
| " " Militia Bounty and Paupers | 1,000.00 |
| " " for Aid to Volunteers and families | 20,000.00 |
| Sidewalk Assessments, uncollected | 1,432.49 |
| " " , ordered | 43,773.82 |
| Amount carried forward | $220,072.01 |

| | |
|---|---|
| Amount brought forward | $220.072.01 |
| Drain Assessments, uncollected | 1,809.77 |
| " " (estimated) | 40,000.00 |
| Betterments for Street Widenings and Extensions (estimated) | 25,000.00 |
| *Uncollected Taxes | 96,189.26 |
| | $383,071.04 |
| Deduct liabilities, as above | 89,600.18 |
| Excess of Assets, Dec. 1, 1871 | $293,470.86 |

UNCOLLECTED TAXES AND OTHER ASSESSMENTS.

The taxes assessed for 1871 were: —

| | | |
|---|---|---|
| For City purposes | $674,808.92 | |
| State Tax | 63,025.00 | |
| County Tax | 25,657.40 | |
| | | $763,491.32 |
| Of the above tax the amount collected is | $644,078.82 | |
| Discounted | 26,155.15 | |
| Abated | 22,895.76 | |
| | | 693,129.73 |
| Balance uncollected | | $70,361.59 |
| Of the tax of 1870 there remained uncollected, Dec. 1, 1870 | | $53,048.04 |
| Of that amount there has been collected | $39,661.89 | |
| Abated | 2,666.44 | |
| | | 42,328.33 |
| Balance uncollected | | $10,719.71 |
| Of the tax of 1869, there remained uncollected, Dec. 1, 1870 | | $8,443.46 |
| Of that amount there has been collected | $4,059.17 | |
| Abated | 246.00 | |
| | | 4,305.17 |
| Balance uncollected | | $4,138.29 |

* A portion of this has been standing for several years. Three fourths of the amount will probably be realized.

| | | |
|---|---|---|
| Of the tax of 1868, there remained uncollected, Dec. 1870 | | $3,558.48 |
| Of that amount there has been collected | | 194.94 |
| Balance uncollected | | $3,363.54 |
| Of the taxes of 1867, 1866, 1865, and 1864, there remains uncollected | | $7,342.79 |
| The taxes on Stock in Cambridge Banks, for 1871, were | | $17,199.00 |
| Of that amount there has been collected | $16,244.26 | |
| Discounted | 645.79 | |
| Abated | 45.59 | |
| | | 16,935.64 |
| Balance uncollected | | $263.36 |
| The amount of Assessments to defray the expense of constructing Sidewalks, committed to the Treasurer in 1871, is | $5,863.26 | |
| Amount of Assessments uncollected, Dec. 1, 1870 | 18,143.38 | |
| | | $24,006.64 |
| Of that amount there has been collected | $22,097.88 | |
| Abated | 476.27 | |
| | | 22,574.15 |
| Balance uncollected | | $1,432.49 |
| The amount of Drain Assessments, committed to the Treasurer in 1871, is | $14,632.81 | |
| Amount of Drain Assessments uncollected Dec. 1, 1870 | $5,571.35 | |
| Amount of Assessments on Broadway and Davis Streets, canceled, and reassessed in 1871 | 4,697.49 | |
| | 873.86 | |
| | | $15,506.67 |

| | | |
|---|---|---|
| Amount brought forward . . . . . | | $15,506.67 |
| Of that amount there has been collected . . . . . | $12,597.54 | |
| Abated . . . . . | 1,099.36 | |
| | | 13,696.90 |
| Balance uncollected . . . . . | | $1,809.77 |

### POLLS AND VALUATION OF ESTATES.

The following table shows the valuation of Estates and number of Polls in the city, as appears by the books of the Assessors on the first day of May last. Stocks in Massachusetts Corporations, owned by our citizens, are not included in the personal property here given. It is estimated that these stocks are worth about $3,000,000.

| Ward | No. of Polls. | Personal Estate. | Real Estate. | Total. | No. of Dwellings. |
|---|---|---|---|---|---|
| 1 | 1,692 | $4,997,800 | $9,759,500 | $14,757,300 | 1,158 |
| 2 | 2,757 | 3,857,600 | 8,573,700 | 12,431,300 | 1,758 |
| 3 | 2,513 | 1,669,900 | 5,633,600 | 7,303,500 | 1,223 |
| 4 | 2,363 | 1,539,600 | 5,481,600 | 7,021,200 | 1,506 |
| 5 | 998 | 1,269,100 | 4,077,400 | 5,346,500 | 605 |
| Tot. | 10,323 | $13,334,000 | $33,525,800 | $46,859,800 | 6,250 |

| | |
|---|---|
| This statement shows an increase for the year, in personal and real property, of . . . . . | $3,762,600 |
| Increase in number of Polls . . . . . | 888 |
| " " Dwellings . . . . . | 341 |

The rate of taxation was $15.60 per thousand, subject to the deduction of four per cent. allowed by the ordinance, making the net rate $14.98 per thousand.

We append the report of a sub-committee appointed to examine the books and accounts of the Treasurer; also the Treasurer's account in full, and the statements of the Auditor, showing

in detail and in recapitulation the appropriations and expenditures.

HAMLIN R. HARDING,
HORATIO G. PARKER,
C. L. HARDING,
JOSEPH H. CONVERSE,
A. P. CLARKE,
K. S. CHAFFEE,
J. A. WOOLSON,
JOHN WILSON,
F. M. MASON,
} *Committee on Finance.*

CAMBRIDGE, *December* 26, 1871.

# REPORT

CONCERNING

# THE ACCOUNTS OF THE TREASURER.

---

In Committee on Finance, *Dec.* 26, 1871.

The Sub-Committee appointed to examine the accounts of the City Treasurer for the financial year ending Nov. 30, 1871, have attended to the duty, and

## REPORT:

That the accounts of the City Treasurer have been correctly kept, and that he has satisfactory vouchers for all payments made by him, according to the schedule herewith submitted, showing a balance in his hands of one hundred and eight thousand eight hundred and sixty-five dollars and seventy cents ($108,865.70) on the first day of December, 1871.

Also, that there remain in the hands of the Treasurer two thousand dollars ($2,000) of the Cambridge Water-loan Bonds more than his account shows the City to be entitled to.

C. L. HARDING,
JOSEPH H. CONVERSE,
JOHN WILSON,
F. M. MASON,
A. P. CLARKE,
JAMES A. WOOLSON,
} *Sub-Committee.*

# SCHEDULE OF EXPENDITURES

FOR

## THE FINANCIAL YEAR ENDING NOVEMBER 30, 1871.

---

### For Instruction in Public Schools.

| | | | |
|---|---|---|---|
| Salary of Superintendent | | $3,000.00 | |
| Salaries of Teachers | | 103,535.77 | |
| | | | $106,535.77 |
| Appropriation | | $110,000.00 | |
| Amount of Expenses | $106,535.77 | | |
| Transferred | 1,391.47 | | |
| | | 107,927.24 | |
| Balance unexpended | | $2,072.76 | |

### For Scientific Department of High School.

| | | | |
|---|---|---|---|
| Chemicals, etc. | | | $75.31 |
| Appropriation | | $100.00 | |
| Amount of Expenses | | 75.31 | |
| Balance unexpended | | $24.69 | |

### For Text Books for High School.

| | | | |
|---|---|---|---|
| Books | | | $162.41 |
| Appropriation | | $200.00 | |
| Amount of Expenses | | 162.41 | |
| Balance unexpended | | $37.59 | |

### For Evening Schools for Adults.

| | | | |
|---|---|---|---|
| Instruction | | $1,711.00 | |
| Other Expenses | | 1,007.16 | |
| | | | $2,718.16 |

| | | |
|---|---|---|
| Appropriation . . . . . | $3,000.00 | |
| Amount of Expenses . . . . . | 2,718.16 | |
| Balance unexpended . . . . | $281.84 | |

For Hopkins Fund.

| | | |
|---|---|---|
| Appropriation . . . . . | $800.00 | |
| Transferred to "Instruction in Public Schools," towards salary of Classical Teacher in High School | 800.00 | |

For Compensation of Secretary of School Committee.

| | | |
|---|---|---|
| Secretary . . . . . | | $300.00 |
| Appropriation . . . . . | $300.00 | |
| Amount of Expenses . . . . . | 300.00 | |

For Care and Repairs of School Houses.

| | | |
|---|---|---|
| Rent of halls for school-rooms . . . | $555.83 | |
| School furniture . . . . . | 3,959.73 | |
| Fuel . . . . . | 6,505.98 | |
| Care of houses, fires, etc. . . . . | 5,444.62 | |
| Mats, dusters, etc. . . . . | 676.23 | |
| Repairs and materials . . . . . | 5,921.17 | |
| Furnaces and repairs . . . . . | 2,839.13 | |
| Books and stationery . . . . . | 2,970.50 | |
| Other Expenses . . . . . | 1,681.23 | |
| | | $30,554.42 |
| Appropriation . . . . . | $32.000.00 | |
| Amount of Expenses . . . . . | 30,554.42 | |
| Balance unexpended . . . . | $1,445.58 | |

For Ward Room, Police Station, and Engine House, Ward Three.

| | | |
|---|---|---|
| Contractor for building . . . . . | $8,637.95 | |
| Cost above contract . . . . . | 773.55 | |
| Paving . . . . . | 333.87 | |
| Other Expenses . . . . . | 399.99 | |
| | | $10,145.36 |
| Appropriation . . $10,000.00 | | |
| Additional Appropriation 145.36 | | |
| | $10,145.36 | |
| Amount of Expenses . . . . | 10,145.36 | |

For Police Court Room and Station House, Ward One.

| | | |
|---|---|---|
| Appropriation . . | $12,000.00 | |
| Transferred . . . | 12,000.00 | |

For Repairs at City Hall.

| | | |
|---|---|---|
| Doors for vault . . . . . | | $175.00 |
| Appropriation . . . . . | $200.00 | |
| Amount of Expenses . . . . . | 175.00 | |
| Balance unexpended . . . . | $25.00 | |

For New School Houses and Alterations.

| | | |
|---|---|---|
| House and land on Gore Street . . . | $23,875.00 | |
| House and land on Spruce Street . . | 3,647.68 | |
| House on Broadway . . . . . | 33,045.00 | |
| House on Hilliard Street . . . . . | 3,914.82 | |
| House on Niagara Street . . . . . | 19,655.43 | |
| Alterations in Washington School House | 12,500.00 | |
| Alterations in Dunster School House | 1,633.00 | |
| Plans, specifications, and superintendence | 2,000.00 | |
| Heating apparatus . . . . . | 7,620.49 | |
| Furniture . . . . . | 1,802.28 | |
| Other Expenses . . . . . | 861.51 | |
| | | $110,555.21 |
| Appropriation . . . . . | $140,000.00 | |
| Amount of Expenses $110,555.21 | | |
| Transferred . . . 10,000.00 | | |
| | 120,555.21 | |
| Balance unexpended . . . . | $19,444.79 | |

For Almshouse and Stone Ledge.

| | | |
|---|---|---|
| Salaries . . . . . | $2,249.13 | |
| Supplies for the house . . . . . | 6,265.52 | |
| Dry goods and clothing . . . . . | 848.36 | |
| Sundry laborers . . . . . | 10,389.67 | |
| Fuel . . . . . | 3,828.99 | |
| Hay, grain, and meal . . . . . | 1,396.07 | |
| Tools, hardware, etc. . . . . | 902.58 | |
| Assistance to poor out of the house . | 6,610.75 | |
| Support of persons in State institutions | 4,384.40 | |
| Repairs . . . . . | 1,973.06 | |
| Other Expenses . . . . . | 3,175.59 | |
| | | $42,024.12 |

| | | |
|---|---|---|
| Appropriation . . . . . | $45,000.00 | |
| Amount of Expenses | $42,024.12 | |
| Transferred . . . . | 2,975.88 | |
| | $45,000.00 | |

For Police and Watch.

| | | |
|---|---|---|
| Chief of Police, salary . . . . . | $1,875.00 | |
| Services of Policemen . . . . . | 53,272.08 | |
| Care of Police Court Room . . . . | 100.00 | |
| Gas and fuel . . . . . | 292.05 | |
| Repairs . . . . . | 247.13 | |
| Supplies . . . . . | 56.73 | |
| Wagon . . . . . | 500.00 | |
| Furniture at Station House No. 3 . . | 303.68 | |
| Boarding horse and horse-hire . . . | 351.00 | |
| Other Expenses . . . . . | 991.06 | |
| | | $57,988.73 |
| Appropriation . . . . . | $60,000.00 | |
| Amount of Expenses . | $57,988.73 | |
| Transferred . . . . | 2,011.27 | |
| | $60,000.00 | |

For Fire Department.

| | | |
|---|---|---|
| Chief Engineer, salary . . . . . | $1,008.43 | |
| Assistant Engineers, salaries . . . . | 1,142.35 | |
| Clerk of Engineers, salary . . . . . | 70.53 | |
| Clerk of Committee, salary . . . . | 75.00 | |
| Services of members . . . . . | 22,987.76 | |
| Fines of members . . . . . | 325.50 | |
| Horses . . . . . | 1,450.00 | |
| Hay, grain, and meal . . . . . | 2,691.99 | |
| Repairs and materials . . . . . | 3,048.95 | |
| Harnesses and repairs . . . . . | 338.32 | |
| Hose and repairs . . . . . | 2,408.15 | |
| Fuel . . . . . | 1,032.39 | |
| Extension, etc. of Fire Alarm (in part) | 1,640.33 | |
| Use of horses . . . . . | 559.75 | |
| Other Expenses . . . . . | 6,169.28 | |
| | | $44,948.73 |

| | | |
|---|---|---|
| Appropriation . . . | $45,000.00 | |
| Additional Appropriation | 5,000.00 | |
| | | $50,000.00 |
| Amount of Expenses . . . . . | | 44,948.73 |
| Balance unexpended . . . . | | $5,051.27 |

For Streets and Paving.

| | | |
|---|---|---|
| Superintendent of Streets, salary . . | $2,375.00 | |
| Amount paid for labor . . . . . | 56,084.19 | |
| Paving . . . . . | 50,752.13 | |
| Gravel, stone, and carting . . . . | 49,523.78 | |
| Horses . . . . . | 1,250.00 | |
| Horse-shoeing and iron-work . . . | 1,896.06 | |
| Hay, grain, and meal . . . . . | 3,022.36 | |
| Damages for widening . . . . . | 76,550.65 | |
| Other Expenses . . . . . | 3,210.29 | |
| | | $244,664.46 |
| Appropriation . . | $150,000.00 | |
| Additional Appropriation . . . | 94,664.46 | |
| | | $244,664.46 |
| Amount of Expenses . . . . . | | 244,664.46 |

For Sewers and Drains.

| | | |
|---|---|---|
| Contractors for building sewers . . . | $20,148.94 | |
| Amount paid for labor . . . . . | 6,308.21 | |
| Brick, stone, and drain-pipe . . . . | 5,633.65 | |
| Lumber, cement, and lime . . . . | 1,672.20 | |
| Other Expenses . . . . . | 1,523.24 | |
| | | $35,286.24 |
| Appropriation . . . . . | $40,000.00 | |
| Amount of Expenses . . . . . | 35,286.24 | |
| Balance unexpended . . . . | | $4,713.76 |

For Care and Repairs of Bridges.

| | | |
|---|---|---|
| Care of draws . . . . . | $909.20 | |
| Repairs and iron-work . . . . . | 6,712.93 | |
| Lumber . . . . . | 2,287.09 | |
| Abutment of Western Avenue Bridge | 3,997.70 | |
| Other Expenses . . . . . | 690.34 | |
| | | $14,597.26 |

| | | |
|---|---|---|
| Appropriation . . . | $8,000.00 | |
| Additional Appropriation . . . . . | 6,597.26 | |
| | | $14,597.26 |
| Amount of Expenses . . . . . | | 14,597.26 |

For Care and Maintenance of West Boston and Cragie's Bridges.

| | | | |
|---|---|---|---|
| City of Boston . . . . . | | $65,048.50 | |
| Commissioner, salary . . . . . | | 250.00 | |
| Repairs and materials . . . . . | | 17,551.17 | |
| Buoy . . . . . | | 98.04 | |
| | | | $82,947.71 |
| Appropriation . . . . . | | $90,000.00 | |
| Amount of Expenses . | $82,947.71 | | |
| Transferred . . . . | 5,000.00 | | |
| | | $87,947.71 | |
| Balance unexpended . . . . | | $2,052.29 | |

For Lighting Streets.

| | | | |
|---|---|---|---|
| Superintendent of Lamps, salary . . | | $700.00 | |
| Gas . . . . . | | 9,436.32 | |
| Fluid, matches, etc. . . . . | | 579.06 | |
| Care of lamps and lighting . . . . | | 3,136.93 | |
| Posts, lanterns, and repairs . . . . | | 2,812.68 | |
| Other Expenses . . . . . | | 378.30 | |
| | | | $17,043.29 |
| Appropriation . . . | $15,000.00 | | |
| Additional Appropriation . . . . . | 2,043.29 | | |
| | | $17,043.29 | |
| Amount of Expenses . . . . | | 17,043.29 | |

For Watering Streets.

| | | | |
|---|---|---|---|
| Paid for watering . . . . . | | | $3,500.00 |
| Appropriation . . . | $3,500.00 | | |
| Amount of Expenses . | 3,500.00 | | |

### For Salaries of City Officers.

| | | |
|---|---|---|
| Mayor | $2,250.00 | |
| Treasurer | 2,875.00 | |
| City Clerk | 2,000.00 | |
| Auditor of Accounts | 500.00 | |
| City Engineer | 3,900.00 | |
| Clerk of Common Council | 412.50 | |
| Messenger | 1,875.00 | |
| Board of Assessors | 3,600.00 | |
| Inspector of Milk | 150.00 | |
| Sealer of Weights and Measures | 375.00 | |
| | | $17,937.50 |
| Appropriation | $18,450.00 | |
| Amount of Expenses | 17,937.50 | |
| Balance unexpended | $512.50 | |

### For Cemeteries.

| | | |
|---|---|---|
| Superintendent, salary | $1,116.65 | |
| Sundry workmen | 6,841.40 | |
| Other Expenses | 1,479.76 | |
| | | $9,437.81 |
| Appropriation | $8,000.00 | |
| Additional Appropriation | 1,437.81 | |
| | $9,437.81 | |
| Amount of Expenses | 9,437.81 | |

### For Public Squares.

| | | |
|---|---|---|
| City Forester | $445.00 | |
| Labor | 1,220.25 | |
| Carpenters' work | 370.58 | |
| Flag | 70.00 | |
| Other Expenses | 261.12 | |
| | | $2,366.95 |
| Appropriation | $4,000.00 | |
| Amount of Expenses | 2,366.95 | |
| Balance unexpended | $1,633.05 | |

### For Interest and Bank Discounts.

| | | |
|---|---|---|
| Cambridge City Bonds | $67,304.00 | |
| Cambridge City Bonds (gold) | 7,500.00 | |
| Cambridge City Notes | 13,732.50 | |
| Lowell Institution for Savings | 1,945.00 | |
| Trustees of Sanders Temperance Fund | 600.00 | |
| Trustees of Dowse Institute | 600.00 | |
| Trustees of Daniel White Charity | 300.00 | |
| Premium for gold | 2,747.22 | |
| Mortgage on City Wharf | 420.00 | |
| Sundry banks, etc., on temporary loans | 11,382.29 | |
| | | $106,531.01 |
| Appropriation | $116,000.00 | |
| Amount of Expenses | 106,531.01 | |
| Balance unexpended | $9,468.99 | |

### For Dana Library.

| | | |
|---|---|---|
| Librarian, salary | $350.00 | |
| Assistant Librarian, salary | 50.00 | |
| Rent and care of room | 375.00 | |
| Books and stationery | 1,802.98 | |
| Bookcase | 89.49 | |
| Other Expenses | 226.65 | |
| | | $2,894.12 |
| Appropriation | $3,087.06 | |
| Amount of Expenses | 2,894.12 | |
| Balance unexpended | $192.94 | |

### For Volunteers and their Families.

| | | | |
|---|---|---|---|
| Amount paid to soldiers' families | | | $21,000.00 |
| Appropriation | $20,000.00 | | |
| Additional Appropriation | 1,000.00 | | |
| | | $21,000.00 | |
| Amount of Expenses | | 21,000.00 | |

### For Soldiers' Monument.

| | | |
|---|---|---|
| Monument in Burial Ground . . . | $383.15 | |
| Grading . . . . . | 522.87 | |
| Stone-cutting . . . . . | 167.00 | |
| | | $1,073.02 |
| Appropriation . . . . . | $1,200.00 | |
| Amount of Expenses . . . . . | 1,073.02 | |
| Balance unexpended . . . . | $126.98 | |

### For Telegraphic Fire Alarm.

| | | |
|---|---|---|
| Extension of Telegraph . . . . . | $6,000.00 | |
| Labor and materials . . . . . | 356.94 | |
| Regulator . . . . . | 50.00 | |
| Other Expenses . . . . . | 539.80 | |
| | | $6,946.74 |
| Appropriation . . . . . | $7,000.00 | |
| Amount of Expenses . . . . | 6,946.74 | |
| Balance unexpended . . . . | $53.26 | |

### For Care and Repairs of Water Works.

| | | |
|---|---|---|
| Superintendent, salary . . . . . | $2,000.00 | |
| Water Registrar, salary . . . . . | 1,800.00 | |
| Clerk of Water Board, salary . . . | 150.00 | |
| Assistance in office . . . . . | 1,524.16 | |
| Engineer . . . . . | 100.00 | |
| Sundry workmen . . . . . | 6,056.29 | |
| Repairs and iron-work . . . . . | 260.08 | |
| Brick, cement, pipe, and packing . . | 109.32 | |
| Tapping machine . . . . . | 265.66 | |
| Fuel and freight . . . . . | 5,827.60 | |
| Damage to abutment of Railroad Bridge | 400.00 | |
| Other Expenses . . . . . | 2,695.56 | |
| | | $21,188.67 |
| Appropriation . . . $20,000.00 | | |
| Additional Appropriation . . . . . 1,188.67 | | |
| | $21,188.67 | |
| Amount of Expenses . . . . . | 21,188.67 | |

### For Supply Account of Water Works.

| | | | |
|---|---|---|---|
| Sundry workmen | | $6,455.91 | |
| Supplies | | 8,143.56 | |
| Other Expenses | | 742.89 | |
| | | | $15,342.36 |
| Appropriation | $15,000.00 | | |
| Additional Appropriation | 342.36 | | |
| | | $15,342.36 | |
| Amount of Expenses | | 15,342.36 | |

### For Extension of Water Works.

| | | | |
|---|---|---|---|
| Sundry workmen | | $12,678.52 | |
| Pipes, freight, and wharfage | | 33,006.34 | |
| Water-gates and valves | | 1,880.00 | |
| Hydrants and iron-work | | 3,839.98 | |
| Lead | | 2,623.97 | |
| Packing | | 247.61 | |
| Lumber, cement, etc. | | 419.46 | |
| Other Expenses | | 2,034.51 | |
| | | | $56,730.39 |
| Appropriation | $50,000.00 | | |
| Additional Appropriation | 40,000.00 | | |
| | | $90,000.00 | |
| Amount of Expenses | | 56,730,39 | |
| Balance unexpended | | $33,269.61 | |

### For Sinking Fund of Water Works.

| | | | |
|---|---|---|---|
| Amount paid Trustees of Fund | | | $25,501.53 |
| Appropriation | $15,000.00 | | |
| Additional Appropriation | 10,501.53 | | |
| | | $25,501.53 | |
| Amount of Expenses | | 25,501.53 | |

For Incidental Expenses.

| | | |
|---|---|---|
| Legal services and expenses | $1,918.48 | |
| Settlement of claims | 7,066.96 | |
| Commissioners, West Boston and Cragie's Bridges | 1,500.00 | |
| Commissioner, Fresh, Spy, and Little Ponds, expenses | 1,000.00 | |
| Somerville tax-bill | 528.12 | |
| Belmont tax-bill | 114.00 | |
| Printing and advertising | 3,188.06 | |
| Books and stationery | 1,924.63 | |
| Revenue stamps and postage | 571.76 | |
| Assessors, copy of books | 600.00 | |
| Abstract for Assessors | 210.21 | |
| Recording births, deaths, and marriages | 552.75 | |
| City Clerk, for clerical assistance | 1,000.00 | |
| Assessing drain taxes | 48.74 | |
| Page of Common Council | 50.00 | |
| City Engineer, services of assistants | 3,353.00 | |
| Assistant Assessors, services | 493.00 | |
| Services of Ward Officers | 565.00 | |
| Rent and care of Ward Rooms | 235.00 | |
| Rent of Armory | 200.00 | |
| Co. C, Fifth Regiment, services | 603.00 | |
| Expenses of Decoration Day | 616.00 | |
| Expenses of Fourth of July | 1,240.97 | |
| Aid to Children's Hospital | 1,500.00 | |
| Premium of insurance | 846.82 | |
| Repairs at City Hall | 3,101.98 | |
| Heating apparatus at City Hall | 2,925.51 | |
| Furniture and carpets at City Hall | 2,157.41 | |
| Expenses at City Hall | 2,767.55 | |
| Railway tickets | 510.00 | |
| Horse-hire and car fares | 628.00 | |
| Expenses, investigation of leakage | 415.98 | |
| Water for streets | 2,520.00 | |
| Amount carried forward | ——— | $44,952.9 |

| | | | |
|---|---|---|---|
| Amount brought forward . . | | $44,952.93 | |
| Water for fire hydrants . . . . . | | 9,730.00 | |
| Repairs of drinking fountains . . . . | | 37.10 | |
| Dam in Miller's River . . . . . | | 315.52 | |
| Grading damages . . . . . | | 1,196.87 | |
| Abating nuisance . . . . . | | 858.02 | |
| Inspector of Milk, and Sealer, assistance . | | 258.41 | |
| Other Expenses . . . . . | | 4,896.03 | |
| | | | $62,244.88 |
| Appropriation . . . | $50,000.00 | | |
| Additional Appropriation | 26,257.88 | | |
| | | $76,257.88 | |
| Amount of Expenses . . . . . | | 62,244.88 | |
| Balance unexpended . . . . . | | $14,013.00 | |

For Payment of City Debt.

| | | | |
|---|---|---|---|
| Lowell Institution for Savings . . . | | $8,000.00 | |
| City Notes . . . . . | | 95,000.00 | |
| Mortgage on City Wharf . . . . . | | 7,000.00 | |
| | | | $110,000.00 |
| Appropriation . . . | $114,200.00 | | |
| Amount of Expenses . | 110,000.00 | | |
| Balance unexpended | $4,200.00 | | |

# RECAPITULATION OF EXPENDITURES FOR THE FINANCIAL YEAR ENDING NOVEMBER 30, 1871.

| | Original Appropriations. | Added subsequently. | Subtracted subsequently. | Appropriations as altered. | Amount of Expenditures. | Balances unexpended. |
|---|---|---|---|---|---|---|
| Instruction in Public Schools | $110,000.00 | . . . . . | $1,391.47 | $108,608.53 | $106,535.77 | $2,072.76 |
| Scientific Department of High School | 100.00 | . . . . . | . . . . . | 100.00 | 75.31 | 24.69 |
| Text Books for High School | 200.00 | . . . . . | . . . . . | 200 00 | 162.41 | 37.59 |
| Evening Schools for Adults | 3,000.00 | . . . . . | . . . . . | 3,000.00 | 2,718.16 | 281 84 |
| Hopkins Fund | 800.00 | . . . . . | 800.00 | . . . . . | . . . . . | . . . . . |
| Compensation of Secretary of School Committee | 300.00 | . . . . . | . . . . . | 300.00 | 300.00 | . . . . . |
| Care and Repairs of School Houses | 32,000.00 | . . . . . | . . . . . | 32,000.00 | 30,554.42 | 1,445.58 |
| Ward Room, Police Station, and Engine House, Ward Three | 10,000.00 | $145.36 | . . . . . | 10,145.36 | 10,145.36 | . . . . . |
| Police Court Room and Station House, Ward One | . . . . . | 12,000 00 | 12,000.00 | . . . . . | . . . . . | . . . . . |
| Repairs City Hall | 200.00 | . . . . . | . . . . . | 200.00 | 175.00 | 25 00 |
| New School Houses and Alterations | 140,000.00 | . . . . . | 10,000.00 | 130,000.00 | 110,555.21 | 19,444.79 |
| Almshouse and Stone Ledge | 45,000.00 | . . . . . | 2,975.88 | 42,024.12 | 42,024.12 | . . . . . |
| Police and Watch | 60,000.00 | . . . . . | 2,011.27 | 57,988.73 | 57,988.73 | . . . . . |
| Fire Department | 45,000.00 | 5,000.00 | . . . . . | 50,000.00 | 44,948.73 | 5,051.27 |
| Streets and Paving | 150,000.00 | 94,664.46 | . . . . . | 244,664.46 | 244,664 46 | . . . . . |
| Sewers and Drains | 40,000.00 | . . . . . | . . . . . | 40,000 00 | 35,286.24 | 4,713.76 |
| Care and Repairs of Bridges | 8,000.00 | 6,597.26 | . . . . . | 14,597.26 | 14,597.26 | . . . . . |
| Care and Maintenance of West Boston and Cragie's Bridges | . . . . . | 90,000.00 | 5,000.00 | 85,000.00 | 82,947.71 | 2,052.29 |
| Lighting Streets | 15,000.00 | 2,043.29 | . . . . . | 17,043.29 | 17,043.29 | . . . . . |
| Watering Streets | 3,500.00 | . . . . . | . . . . . | 3,500.00 | 3,500.00 | . . . . . |
| Salaries of City Officers | 18,450.00 | . . . . . | . . . . . | 18,450.00 | 17,937.50 | 512.50 |
| Cemeteries | 8,000.00 | 1,437.81 | . . . . . | 94,37 81 | 9,437.81 | . . . . . |
| Public Squares | 4,000.00 | . . . . . | . . . . . | 4,000.00 | 2.366.95 | 1,633.05 |
| Interest and Bank Discounts | 116,000.00 | . . . . . | . . . . . | 116,000.00 | 106,531.01 | 9,468.99 |
| Dana Library | 3,087.06 | . . . . . | . . . . . | 3,087.06 | 2,894.12 | 192.94 |
| Volunteers and their Families | 20,000.00 | 1,000.00 | . . . . . | 21,000.00 | 21,000.00 | . . . . . |
| Soldiers' Monument | 1,200.00 | . . . . . | . . . . . | 1,200.00 | 1,073.02 | 126.98 |
| Telegraphic Fire Alarm | 7,000.00 | . . . . . | . . . . . | 7,000.00 | 6,946.74 | 53.26 |
| Care and Repairs of Water Works | 20,000.00 | 1,188.67 | . . . . . | 21,188.67 | 21,188.67 | . . . . . |
| Supply Account of Water Works | 15,000.00 | 342.36 | . . . . . | 15,342.36 | 15,342.36 | . . . . . |
| Extension of Water Works | 50,000.00 | 40,000.00 | . . . . . | 90,000.00 | 56,730.39 | 33,269.61 |
| Sinking Fund of Water Works | 15,000.00 | 10,501.53 | . . . . . | 25,501.53 | 25,501.53 | . . . . . |
| Incidental Expenses | 50,000.00 | 26,257.88 | . . . . . | 76,257.88 | 62,244.88 | 14,013.00 |
| Payment of City Debt | 114,200.00 | . . . . . | . . . . . | 114,200 00 | 110,000.00 | 4,200.00 |
| Amount of Appropriations | $1,105,037.06 | . . . . . | . . . . . | $1,332,037.06 | $1,263,417.16 | $98,619.90 |
| Amount of Expenditures | . . . . . | . . . . . | . . . . . | 1,263,417.16 | . . . . . | . . . . . |
| Balances unexpended | . . . . . | . . . . . | . . . . . | $98,619.90 | . . . . . | . . . . . |

The appropriation for Hopkins Fund was transferred to Instruction in Public Schools. The creation of a City Debt of $257,000 was authorized for appropriations made subsequent to the annual appropriations, namely, Police Court Room and Station House, Ward One, $12,000, all of which was transferred to other appropriations; Fire Department, $15,000, of which $10,000 were transferred; West Boston and Cragie's Bridges, $90,000, of which $5,000 were transferred; Streets and Paving, $100,000, of which $5,335.54 were transferred; Extension of Water Works, $40,000, for which last mentioned sum no loan was negotiated.

# ACCOUNT OF CITY DEBT, DECEMBER 1, 1871.

| Date. | Rate. | To whom Payable. | Amount. | Total. | When Payable. | Interest paid to. |
|---|---|---|---|---|---|---|
| April 6, 1857. | 5¾ | Lowell Institution for Savings | $30,000.00 | | April 6, 1877. | Oct. 6, 1871. |
| July 1, 1858. | 5 | Cambridge City Bonds | 7,000.00 | | July 1, 1878. | July 1, 1871. |
| July 1, 1859. | 5 | Cambridge City Bonds | 15,000.00 | | July 1, 1879. | July 1, 1871. |
| July 1, 1862. | 5 | Cambridge City Bonds | 20,000.00 | | July 1, 1882. | July 1, 1871. |
| Aug. 1, 1862. | 5 | Cambridge City Bonds | 30,000.00 | | Aug. 1, 1882. | Aug. 1, 1871. |
| Sept. 10, 1862. | 5 | Cambridge City Bonds | 40,000.00 | | Sept. 10, 1882. | Sept. 10, 1871. |
| Sept. 10, 1862 | 5 | Cambridge City Bonds | 30,000.00 | | Sept. 10, 1877. | Sept. 10, 1871. |
| Nov. 20, 1862. | 5 | Cambridge City Bonds | 14,000.00 | | Nov. 20, 1882. | Nov. 20, 1871. |
| March 5, 1863. | 5 | Cambridge City Bonds | 150,000.00 | | Jan. 1, 1893. | July 1, 1871. |
| April 1, 1864. | 5 | Cambridge City Bonds | 100,000.00 | | April 1, 1889. | Oct. 1, 1871. |
| Nov. 14, 1870. | 7 | Cambridge City Note | 5,000.00 | | Oct. 7, 1872. | Oct. 7, 1871. |
| Nov. 22, 1870. | 7 | Cambridge City Note | 40,000.00 | | Oct. 7, 1872. | Oct. 7, 1871. |
| Nov. 25, 1870. | 7 | Cambridge City Note | 25,000.00 | | Oct. 7, 1872. | Oct. 7, 1871. |
| Nov. 25, 1870. | 7 | Cambridge City Note | 30,000.00 | | Oct. 7, 1872. | Oct. 7, 1871. |
| July 1, 1870. | 6 | Cambridge City Bonds | 20,000.00 | | July 1, 1890. | July 1, 1871. |
| June 2, 1871. | 6 | Cambridge City Note | 10,000.00 | | June 2, 1874. | |
| June 2, 1871. | 6 | Cambridge City Note | 10,000.00 | | June 2, 1874. | |
| June 2, 1871. | 6 | Cambridge City Note | 10,000.00 | | June 2, 1874. | |
| June 2, 1871. | 6 | Cambridge City Note | 10,000.00 | | June 2, 1874. | |
| June 2, 1871. | 6 | Cambridge City Note | 10,000.00 | | June 2, 1874. | |
| June 2, 1871. | 6 | Cambridge City Note | 7,000.00 | | June 2, 1874. | |
| June 2, 1871. | 6 | Cambridge City Note | 5,000.00 | | June 2, 1874. | |
| July 1, 1871. | 6 | Cambridge City Bonds | 100,000.00 | | July 1, 1876. | |
| July 1, 1871. | 6 | Cambridge City Bonds | 100,000.00 | | July 1, 1881. | |
| July 1, 1871. | 6 | Cambridge City Bonds | 100,000.00 | | July 1, 1886. | |
| | | | | $918,000.00 | | |
| July 1, 1856. | 6 | Cambridge Water Bonds | 50,000.00 | | July 1, 1881. | July 1, 1871. |
| May 1, 1865. | 6 | Cambridge Water Bonds | 186,400.00 | | May 1, 1875. | Nov. 1, 1871. |
| Aug. 1, 1865. | 6 | Cambridge Water Bonds | 55,000.00 | | Aug. 1, 1883. | Aug. 1, 1871. |
| July 2, 1866. | 6 | Cambridge Water Bonds | 100,000 00 | | July 2, 1886. | July 2, 1871. |
| April 1, 1867. | 6 | Cambridge Water Bonds | 150,000.00 | | April 1, 1888. | Oct. 1, 1871. |
| April 1, 1868. | 6 | Cambridge Water Bonds | 175,000.00 | | April 1, 1888. | Oct. 1, 1871. |
| May 1, 1869. | 6 | Cambridge Water Bonds | 112,000.00 | | May 1, 1889. | Nov. 1, 1871. |
| July 1, 1870. | 6 | Cambridge Water Bonds | 60,000.00 | | July 1, 1890. | July 1, 1871. |
| May 1, 1871. | 6 | Cambridge Water Bonds | 50,000.00 | | May 1, 1891. | Nov. 1, 1871 |
| | | | | 938,400.00 | | |
| Oct. 1, 1863. | 6 | Trustees of Daniel White Charity | 5,000.00 | | | Oct. 1, 1871. |
| June 1, 1858. | 6 | Trustees of Dowse Institute Fund | 10,000.00 | | | June 1, 1871. |
| Oct. 8, 1864. | 6 | Trustees of Sanders Temperance Fund | 10,000.00 | | | Oct. 8, 1871. |
| | | | | 25,000.00 | | |
| | | State Tax | 63,025.00 | | Dec. 1, 1871. | |
| | | County Tax | 25,657.40 | 88,682.40 | Dec. 31, 1871. | |
| | | | | $1,970,082.40 | | |

# TREASURER'S ACCOUNT.

**Dr.** JOSEPH WHITNEY, TREASURER,

| | | |
|---|---|---|
| 1870. | Balance on hand | $83,857.57 |
| Dec. 1. | Old Lumber sold | 7.50 |
| | Old Stoves sold | 14.00 |
| | Rent of Police Court Room | 350.00 |
| | Insurance on loss by Fire at City Hall | 103.15 |
| | Trees sold | 6.37 |
| | Rent of Lot, Sidney Street | 20.00 |
| | State of Massachusetts, School Fund | 2,216.29 |
| | County of Middlesex, Dog Licenses | 2,087.06 |
| | State of Massachusetts, State Aid | 19,000.00 |
| | State of Massachusetts, Corporation Tax | 32,721.38 |
| | State of Massachusetts, Armory Rent | 100.00 |
| | State of Massachusetts, Militia Bounty | 684.00 |
| | State of Massachusetts, State Pauper Account | 105.69 |
| | No. 3 Engine House, sold | 4,000.00 |
| | Station House, Ward III., sold | 300.00 |
| | Town of Brighton, for Coal | 40.00 |
| | D. Kneeland, Fines Refunded | .62 |
| | A. Moses, Peddler's License | 25.00 |
| | Sundry Persons, for Shade Trees | 126.00 |
| | E. M. Abbott, Tuition | 50.00 |
| | Trustees Hopkins Charity | 899.81 |
| | Quinn House, Ward III., sold | 770.00 |
| | Return Premium on Insurance Policy, No. 3 Engine House | 24.75 |
| | J. Winlock, labor, etc. on Telegraph | 35.90 |
| | Sundry Persons, Pumping out Cellars | 74.50 |
| | Horse sold | 100.00 |
| | Old Hearse and Building sold | 50.00 |
| | Boston and Lowell Railroad Co., and Camb. Gas Light Co. for Water Pipe | 1,953.80 |
| | Auctioneers' Licenses | 12.00 |
| | Circus Licenses | 20.00 |
| | No. 7 Engine, sold | 325.00 |
| | Rent of Toll House, West Boston Bridge | 25.00 |
| | J. K. Farwell, Superintendent, account Cambridge Cemetery | 12,432.70 |
| | Weighing Fees | 528.73 |
| | Sundry Persons, Paving Assessments | 22,097.88 |
| | A. F. Fifield, Registrar, account Water Works | 127,533.50 |
| | Sundry Persons, Drain Assessments | 12,597.54 |
| | G. L. Cade, Superintendent, account Streets and Paving | 4,074.33 |
| | Police Court, Fines, Costs, etc. | 3,780.30 |
| | Dana Library, Fines and Subscriptions | 291.28 |
| | Accrued Interest on Bonds sold | 834.83 |
| | Permanent Loan | 412,000.00 |
| | Temporary Loan | 367,517.18 |
| | J. W. Averill, Warden, Almshouse Account | 17,189.77 |
| | Taxes of 1871 | 644,078.82 |
| | Taxes of 1870 | 39,661.89 |
| | Taxes of 1869 | 4,059.17 |
| | Taxes of 1868 | 194.94 |
| | Taxes on Bank Shares | 16,244.26 |
| | Interest on Taxes | 1,310.93 |
| | | $1,836,533.44 |

CAMBRIDGE, *November* 30, 1871.

IN ACCOUNT WITH THE CITY OF CAMBRIDGE. Cr.

| | | |
|---|---|---|
| 1871. | State Tax | $63,025.00 |
| Dec. 1. | County Tax | 25,657.40 |
| | Sundry Persons, Mayor's Drafts and Orders | 1,047,018.70 |
| | Sundry Persons, Temporary Loans | 367,517.18 |
| | Sundry Persons, Interest Temporary Loans | 11,382.29 |
| | Sundry Persons, Interest Permanent Loans | 97,086.68 |
| | Sundry Persons, Interest Permanent Loans | 113,000.00 |
| | Premium on Gold | 1,847.23 |
| | State of Massachusetts, Percentage on Liquor Sales | 157.41 |
| | State of Massachusetts, Bank Tax of 1870 | 975.85 |
| | Balance on hand | 108,865.70 |
| | | $1,836,533.44 |

JOSEPH WHITNEY, *Treasurer.*

# REPORT

OF THE

## TRUSTEES OF THE SINKING FUND OF THE CAMBRIDGE WATER WORKS.

---

The undersigned, Trustees of the Sinking Fund of the Cambridge Water Works, respectfully submit the following Report: —

| | | | |
|---|---|---|---|
| Amount of Fund June 30, 1870 . . . . . | | | $59,266.72 |
| Received from sale of old iron . . . . . | | | 539.21 |
| Received from Registrar for rates, supplies, etc., for the year . . . . | | $110,348.96 | |
| Less amount paid for care, repairs, etc., | $35,297.23 | | |
| Less Interest on Water Bonds . . . . . | 51,504.00 | | |
| | | 86,801.23 | |
| | | | $23,547.73 |
| Interest on sundry temporary loans to the city . . | | | 2,578.27 |
| Interest on Fund . . . . . | | | 3,451.19 |
| | | | $89,383.12 |
| Accrued Interest on Bonds to June 30, 1871 . . . | | | 428.00 |
| Actual value of Fund, June 30, 1871 . . . . . | | | $89,811.12 |

The Fund is invested in Cambridge Water Bonds, excepting a temporary loan to the City of $11,860.12.

It will be seen that the Fund has been increased to an amount exceeding thirty thousand dollars in the course of the year. This extraordinary increase indicates great prosperity in this Department, and shows that the whole Water Debt will be extinguished (unless expenditures are made, not now foreseen) within a period

of twenty or twenty-five years. In view of the rapid increase of the Fund, being this year more than double what is required by the statute, it may be well for the City Council to consider the expediency of reducing the Water Rates. This, of course, will not be done without a full and careful consideration of the future extensions of the Works, and the necessary expenditures therefor. Such extensions are now in contemplation, and will, very likely, be carried into effect. It is probable that the few streets in the City not now furnished with water pipes will soon be so furnished; and that the stand-pipe will be raised to a height sufficient to supply residents upon our highest grounds, and give the Fire Department a "head" of water which will be exceedingly valuable. New pumps, capable of discharging 5,000,000 gallons in twenty-four hours, have already been ordered. All these improvements will require a large expenditure of money, and it may not be expedient, under the circumstances, to make, at present, any reduction in rates.

H. R. HARDING,
JOSEPH H. CONVERSE,
JOS. WHITNEY,
} *Trustees of the Sinking Fund of the Water Works.*

# REPORT

OF THE

# COMMITTEE ON SOLDIERS AND THEIR FAMILIES.

---

The Joint Committee on Soldiers and their Families submits to the City Council its Report for the year ending Nov. 30, 1871.

The whole number of cases in which aid has been granted during the year 1871 has been 279. The number now on the list is 259.

| | |
|---|---|
| The appropriation for Volunteers and their Families was . . . . . | $21,000.00 |
| The amount paid from said appropriation to Nov. 30, as appears by the books of the Auditor, was . . . . . | $21,000.00 |

The payments of State Aid, as returned to the Auditor of the Commonwealth, are for the year ending Dec. 31, 1871, and amount to $20,762.50, of which sum $20,486.50 will be reimbursed to the City by the State.

The monthly payments now amount to about $1,700, and an appropriation of $21,000 will be sufficient for the ensuing year.

All which is respectfully submitted.

EDWARD KENDALL,
W. GOULD ROBY,
CHAS. R. PATCH,
JOHN WILSON,
A. R. SMITH,
A. P. CLARKE,

*Committee on Soldiers and their Families.*

Cambridge, *Dec.* 27, 1871.

# REPORT

OF THE

# COMMISSIONERS OF THE CAMBRIDGE CEMETERY.

---

In conformity with the statutes of the Commonwealth, the Commissioners of the Cambridge Cemetery herewith submit to the City Council their Seventeenth Annual Report, for the financial year ending November 30, 1871.

The Expenditures of the year have been as follows; namely:—

| | | |
|---|---|---|
| Superintendent's salary | $1,116.65 | |
| Sundry workmen | 6,841.40 | |
| Other Expenses | 1,479.76 | |
| Total | | $9,437.81 |

The Receipts have been as follows; namely:—

| | | |
|---|---|---|
| For burial lots | $9,736.50 | |
| For burial fees | 1,119.30 | |
| For care of lots | 1,386.90 | |
| For grave-markers | 30.00 | |
| For wood | 73.00 | |
| For hay and sedge grass | 87.00 | |
| | | $12,432.70 |

| | |
|---|---|
| The total Appropriation for the year was | $9,437.81 |
| The total Expenditure was | 9,437.81 |
| Excess of receipts over expenditures in 1871 | $2,994.89 |
| Excess of expenditures over receipts in 1870 | 5,079.71 |

The number of lots now prepared and ready for sale is sixty-nine, being twenty-eight less than in December, 1870. It will be seen that, for the first time in several years, the receipts have exceeded the expenditures, and this to a considerable amount. The sum received from the sale of burial lots has been more than double what it was in 1870. The number of lots sold during the past year was one hundred; while, for the previous twelve months, the number was only sixty-two. The number sold in 1869 was sixty-nine. The whole number of interments for the past year was four hundred and eighty-five, being an increase over the previous year of one hundred and forty-one. This increase is quite remarkable, and as there has not, to our knowledge, been any unusual mortality in proportion to the population, the increase of interments must be attributed, in a great measure, to the larger number of inhabitants of the city and the consequent greater number of deaths; as well as to the attractiveness of the Cemetery as a place of burial.

During the past year a substantial fence has been built on the northern boundary of the grounds. A considerable number of lots of small size have been prepared in this vicinity, and have met with a rapid sale. They supply a demand which has long been felt.

The grounds have been kept in their usual excellent order. Owing to the long continued drought in the seasons of 1870 and 1871, the appearance of the Cemetery has not been quite as good as it would have been if the usual rain-fall had taken place. Under the scorching rays of our sun nothing but frequent showers will preserve ornamental grounds in the condition most attractive to the eye. Irrigation has been resorted to, but has only partially succeeded. No improvements, on a large scale, have been carried forward by the Commissioners during the year; but the constant transfer of lots to purchasers, the burials therein, and the consequent careful attention which has been bestowed upon them, have had the inevitable effect to improve the whole Cemetery, which will now compare favorably with any other in the State.

We renew the expression of satisfaction with the services of the Superintendent, made last year by the Board. He has en-

deavored in every way to meet the proper requirements of his position, and has admirably succeeded.

H. R. HARDING,
Z. L. RAYMOND,
JOHN C. FARNHAM,
JOHN M. TYLER,
C. M. HOVEY,
DANIEL U. CHAMBERLIN,
GEO. S. SAUNDERS,
} *Commissioners of the Cambridge Cemetery.*

CAMBRIDGE, *December* 13, 1871.

# REPORT

OF THE

## BOARD OF OVERSEERS OF THE POOR.

---

The Overseers of the Poor respectfully submit their Annual Report to the City Council, for the financial year ending November 30, 1871.

| | | |
|---|---|---|
| The Appropriation made by the City Council at the beginning of the year was | | $45,000.00 |
| Whole amount expended for the year | | 42,024.12 |
| Balance unexpended | | $2,975.88 |

The Receipts have been as follows: —

| | | |
|---|---|---|
| From products of the Farm | $3,756.50 | |
| From Piggery, from sale of hogs and pigs | 3,025.45 | |
| From Ledge, for stone | 9,495.14 | |
| From the State | 233.56 | |
| For Board | 676.63 | |
| From sundry sources | 2.49 | |
| | | $17,189.77 |
| Amount now due from cities and towns | $283.00 | |
| Amount now due from State | 575.00 | |
| Amount now due for stone | 5,945.15 | |
| | | 6,803.15 |
| | | $23,992.92 |

RECAPITULATION.

| | | |
|---|---|---|
| Total Appropriation for the year | | $45,000.00 |
| Balance unexpended | $2,975.88 | |
| Receipts from all sources | 17,189.77 | |
| Amount due, as above | 6,803.15 | |
| | | 26,968.80 |
| | | $18,031.20 |

| | |
|---|---|
| Actual expense for the year . . . . . | $18,031.20 |
| Actual expense in 1870 . . . . . | 15,624.11 |
| Being an increase in 1871 of . . . . . | $2,407.09 |
| Amount of assistance rendered by the Overseers outside the house during the year . . . . . | $6,590.63 |
| Paid to Hospitals, Asylums, Reform Schools, etc. . | 3,890.79 |
| | $10,481.42 |

| | |
|---|---|
| Value of personal property in 1871 . . . . . | 19,184.00 |
| " " " 1870 . . . . . | 25,530.06 |
| Decrease in 1871 . . . . . | $6,346.06 |

It will be noticed that the net expenses have increased by the amount of $2,407.09 during the year, while the value of the personal property has declined by the amount of $6,346.06 in the same time. This decrease is wholly in the department known as the Piggery. A remarkable mortality has taken place among the hogs and pigs; while, at the same time, the price has declined, until, at present, such property is worth less than half its value a year ago. Under these circumstances the Overseers have decided to abolish the Piggery entirely, and sell all the property connected therewith. An additional reason for this is that it seems to be the policy of the City Government not to allow the keeping of pigs by individuals, and a decent regard for consistency would seem to demand that citizens should not be prohibited from doing, on a small scale, what the City is doing on a very large one. The Piggery at the Almshouse has long been an offense to the senses both of sight and smell.

The increase in net expenses is wholly in consequence of assistance rendered *outside the house*. This item has constantly and rapidly been augmented until it has, this year, reached the sum of $10,481.42. A considerable portion of this was expended in aid of persons who have no legal settlement here, but whose distressing circumstances have strongly appealed to the Overseers for relief. While it is the aim of the Board to keep these expenditures within reasonable limits, they have felt it their duty, in urgent cases, to give assistance to worthy individuals who are really State paupers.

The net expenses *at the house* this year were $7,549.48 against $8,522.54 in 1870, being a reduction of nearly $1,000. The number of inmates has averaged 74, or one less than in 1870. Last year the net cost for each pauper supported in the house (not reckoning interest on the cost of the Institution) was $113.63, or about $2.20 per week. This year the cost has been $102.02, or about $1.96 per week. For this small sum food, clothing, shelter, medical assistance, and all other needful things have been provided.

No extensive improvements have been made by the Overseers during the year. Hot and cold water apparatus has been introduced into the wash-room, and soapstone tubs have been set there. One of Fairbanks' ten ton scales has been purchased for the purpose, principally, of weighing stone sold from the Ledge. Formerly stone was sold wholly by measurement, much to the disadvantage of the City in various ways. The subject of introducing gas for lighting the premises has been before the Board, but no definite action has been taken.

The house and grounds have been kept in perfect order by the Warden and Matron, with whose services the Board are entirely satisfied.

The school has been for several months in charge of Miss Richardson, and is in good condition.

H. R. HARDING,
BENJ. F. WYETH,
SAMUEL C. KNIGHTS,
CHAS. R. PATCH,
ORLANDO STEWART,
TIMOTHY DWYER,
ROBERT STEWART,
} *Overseers of the Poor of Cambridge.*

CAMBRIDGE, *December* 20, 1871.

# REPORT OF JAMES R. MORSE, M. D.,

VISITING PHYSICIAN.

---

*To the Overseers of the Poor of the City of Cambridge : —*

Gentlemen, — At the close of the current municipal year, it becomes my duty to submit to your Board a report of the sickness which has existed at the Almshouse during the year, and of my efforts for the relief of the same. When endeavoring to make an estimate of the standard of health in a public institution, it would seem proper to take into consideration the previous history, as well as the present condition of those who become inmates of the same; and I need not remind your intelligent Board of the fact, that a large proportion of those who enter the house for medical care and treatment are of that class whose habits of life bring them to the institution with constitutions so broken by constant infringement of the laws of life and health that they seem beyond the hope of a full restoration of health by medical aid. And a still larger proportion may be safely ranked among the very unfortunate class of persons whose physical imperfections are the result of the evil habits of their parents, whose transgressions of the laws of life have transmitted to those that come after them the bitter reward of inherited disease.

May we not also regard the surroundings of this institution as very important in its sanitary effects upon the inmates; and you will allow me to suggest that the very unpleasant odors pervading the atmosphere about its premises cannot be regarded as either agreeable or health-producing. It, however, affords me great pleasure to report a smaller amount of acute disease at the house than has existed for a number of years past, and I

regard this higher standard of health among the inmates as the result of a strictly uniform and healthful diet, and a faithful obedience to all the regulations of the house.

Of the whole number which have required medical care and treatment during the year, six have died from the following causes: one from dry gangrene; one from pulmonary consumption; one from local inflammation of the bowels, with ulceration; one from chronic disease of knee joint; one from delirium tremens; and one from chronic gastro-enteritis. All cases of acute disease occurring at the house during the year have recovered; while some of the chronic cases have required constant care and attendance in the past year, and will probably require the same watchful care in the future, as their condition is such that they often receive great benefit from the encouragement of hope and the solace of sympathy. One severe case of small-pox was, some ten days since, brought to the hospital for contagious diseases, which is now rapidly recovering and will soon be in a condition to leave. All persons sent to the house who have not been vaccinated previously, are protected by vaccination immediately upon entering. Two cases of confinement have occurred at the house, and two have been received immediately after their confinement, all of whom, under the faithful care of the Matron and her assistants, have rapidly recovered.

Four foundlings have been received at the house during the year, and kindly cared for until other homes are provided for them.

I have visited persons out of the house who have applied for aid from the city, whenever it was desired by any member of your Board. It has been my uniform custom to visit the house every alternate day, and every day when cases of acute disease are under treatment. Such frequent medical visits may seem uncalled for, but in my experience are found very desirable, as the class to be cared for expect frequent calls with many encouraging words; also attacks of acute disease are seen at an early stage, without the necessity of sending for medical aid at unseasonable hours. It affords me great pleasure to report that in all the departments of the institution the greatest harmony and good feeling has existed between those who have had the care and those who have been cared for, thus rendering their mu-

tual relations more pleasant. I must also, in closing, speak in words of high commendation of the fidelity and kindness manifested by the Warden and Matron in the discharge of the many arduous duties devolving upon them.

Also, gentlemen, please accept, for your kindness to and continued confidence in me, my warmest thanks.

Respectfully submitted,

J. R. MORSE.

# REPORT

OF THE

# CHIEF ENGINEER OF THE FIRE DEPARTM NT.

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FIRE DEPARTMENT OFFICE, CITY HALL,
CAMBRIDGE, *December* 1, 1871.

*To his Honor the Mayor and the City Council of Cambridge:—*

GENTLEMEN,— As required by the Fire Ordinance of the City, I have the honor to submit the first Annual Report of the Steam Fire Department of Cambridge, in which you will find a complete roster of the men connected with it, with schedule of property owned by the city, and a statement giving in statistical form the number of fires and alarms occurring since December 18, 1870, to November 30, 1871, at which time I was authorized to close the year. You will also find a statement showing the losses by fire, and the amount of insurance as near as could be ascertained.

## CONDITION OF THE DEPARTMENT.

Assuming command of the Department on the fifth day of January, 1871, I found it lacking in many provisions essential to a thorough performance of the duties required, and at once recommended to your consideration the purchase of additional hose and the furnishing of better accommodations in the Engine and Hook and Ladder House in Ward Four, and the Engine House in Ward Five. The suggestions made, in the communications addressed to your honorable Boards, I am pleased to say were sanctioned by the passage of orders directing the purchase of hose and the alterations needed at the engine-houses named.

The alterations desired to be made in Engine House No. Two, and which your honorable Boards ordered, have not been made,

owing to the large and unexpected expense they would have necessarily demanded. In this connection allow me to say that, in my opinion, it would be injudicious to expend a very large sum upon the present structure, if its use is continued by the Steamer and Ladder Truck, on the ground that, after such an improvement shall have been made, the structure will be too cramped and limited for the convenience of the companies and apparatus occupying the building. I would therefore respectfully recommend the sale of the present structure and the land upon which it stands, and that the school-house lot on Front Street, near Main, be taken for the use of the Steamer and Ladder companies, and for a Ward Room, and that a suitable edifice be erected thereon for these purposes, if such a use of the lot is not inconsistent with the purposes of education. This course, I think, could be accomplished at a moderate increase of the expense named in the original proposition to remodel the present structure.

Last spring an order was adopted authorizing the erection of a brick stable to be connected with Engine House No. Four, on North Avenue; but the work was stayed, and the stable remains unbuilt. I would now urge that the structure be erected, to take the place of the present wooden building, which is old and dilapidated.

The Department, I am pleased to say, has maintained good deportment, and an efficiency in the performance of duty honorable to itself, and, I trust, satisfactory to the honorable City Council.

No occasion has been presented, during the year, to impose words of censure or official reprimand upon any member of the Department, and all discharges have been at the instance of the members discharged.

The best of good feeling has existed between the several companies, a fact which is as agreeable to myself as it is honorable to those here alluded to. A generous spirit of rivalry in the performance of duty has signalized the efforts of all connected with the Department in their desire promptly to respond to the numerous calls which have been made upon them.

### INCREASED COMPENSATION.

During the past summer, the compensation of the assistant engineers, hosemen, and hook and ladder-men has been increased as follows: engineers, $50 per annum; hosemen and ladder-men, $25 per annum; making the aggregate increase of compensation $1,700 per annum, — an expenditure not anticipated at the beginning of the year when the appropriation was made, and which necessarily swells the disbursements made from the appropriation for the Fire Department.

### REDUCTION OF THE DEPARTMENT.

By an order adopted on the seventh day of March last, the company having charge of Hand Engine No. Four was disbanded, and the members thereof were paid for their services up to that date. The disbandment of this company removed the last traces of the former mode of extinguishing fires, and from that time the Department became one wholly equipped with apparatus operated by steam.

By some it may not have been thought wise or judicious to displace what appeared to be a safeguard to the very populous Fourth Ward; but, upon subsequent reflection, those who may have entertained such an opinion have deemed the action prudent and economical.

### APPROPRIATION AND EXPENDITURES.

The Appropriation for the Department, made at the beginning of the year, was $45,000, of which amount $44,948.73 have been expended as follows: —

| | |
|---|---|
| Pay of Engineers and Members | $25,609.57 |
| New Hose, and repairs | 2,408.15 |
| Hay and Grain | 2,691.99 |
| Hard and soft Coal | 1,032.39 |
| Repairs and materials | 3,048.95 |
| Harnesses and repairs | 338.32 |
| Horses and Horse Hire | 2,009.75 |
| Fire Alarm Telegraph, and other expenses, as per Auditor's statement | 7,809.61 |
| | $44,948.73 |

This sum exceeds the expenditure of last year by the sum of $3,353. It is proper, however, to state that more than $5,000 have been paid this year to meet bills contracted in the financial year 1870; also that a portion of the expenses of the Fire Alarm Telegraph, amounting to $1,640.33, all of which last year were charged in a separate account, have this year been charged to the Fire Department.

It may be added that, aside from the new engine and new hose carriages, which may be properly classed as extraordinary expenses, the outstanding bills of the fiscal year may be safely stated to be less than $100. It may be stated here that the receipts of the Department for the year have been $590.02.

## THE APPARATUS.

The apparatus is in excellent condition, every engine having been thoroughly inspected and repaired in the machine-shop of Messrs. Allen & Endicott, excepting Engine Four, which was sent to Manchester, N. H., to receive a new set of wheels and a general overhauling. It has been found the present year that local mechanics can perform as satisfactory work, in the matter of repairs upon our engines, as can be done outside of the city by parties having no further interest than the receipt of compensation for such labor.

The unusual number of alarms occurring during the year, and the response of the apparatus in every instance, has necessarily caused extraordinary wear and tear; hence it has been found requisite to make frequent repairs.

To provide against any possible accident by the bursting of a boiler, I have caused the boilers of Engines One, Two, and Three, to be inspected by a sworn government inspector of steam boilers, who has given certificates allowing the use of one hundred pounds steam pressure. This precautionary measure will in a degree relieve from unjust criticism all who may in any manner be clothed with responsibility. The engines alluded to have been in service seven, eight, and nine years respectively, as numerically named, and have never been inspected in this manner before. It is my opinion that such inspection should be made annually; for the small expense of ascertaining the strength

of a steam boiler should not be considered for a moment, when the lives of firemen and citizens are concerned.

An order adopted by your honorable Boards, authorizing the Chief Engineer, under direction of the Committee on the Fire Department, to contract for a new Steam Fire Engine, at an expense not exceeding $4,500, has been complied with; and the engine will be completed and delivered on or before January 1, 1872. This engine, it will be remembered, is intended to take the place of Engine Three, as stated in a communication from the Chief Engineer to the City Council.

With the introduction of this new and more powerful apparatus, the Department will be augmented so far as to have a spare engine, to be employed when repairs are being made upon either of the other steamers, and which can also be used at a large fire when not so employed.

### HOSE CARRIAGES.

Three four-wheel hose carriages, capable of carrying 1,000 feet of hose each, are now in course of construction by Mr. Andrew J. Jones, of this city, at an expense of $2,600, which, when completed, will supply a long-felt want in the Department. The present two-wheel carriage is not only dangerous to the driver, but tends to wear upon the horse attached to it, and, besides, is lacking in facilities to accommodate the carrying of a needed complement of hose.

### LADDERS.

I would again call your attention to the fact that longer ladders are required to reach the roofs of buildings four, five, and six stories high. It is impossible, until some provision is made, to increase the length of ladders now carried on the ladder truck, or to admit new ones, for the reason that the depth of house is not sufficient to receive ladders of the length desired. The longest ladder now in service is a splice fifty feet long, which would fail to reach the roofs of buildings recently erected. This arm of the service is an important one, and should not be neglected.

### LEADING HOSE.

During the year, 1,011 feet of leather hose, and 200 feet of rubber hose, have been purchased, at an expense of $1,887.16.

The condition of the hose, excepting that purchased within two years, is poor, and it should be replaced with good hose without delay. Considerable expense for repairs on hose has been borne the present year.

### HOSE COMPANY.

The petition of citizens residing in and doing business in Ward Four, asking that a Hose Company be formed in place of the Engine Company disbanded, was duly considered, and leave to withdraw was granted the petitioners by your honorable Boards. Should the proposition of the honorable Water Board to increase the head of water be attended with success, it would leave in my opinion no reason why an efficient hose company should not be organized. With a greater head of water as contemplated, lines of hose could be laid direct from fire hydrants near which a fire might occur, and satisfactory execution accomplished in the extinguishment of the same.

I would, therefore, recommend the organization of a Horse Hose Company in Ward Four, and that the engine-house at the junction of River Street and Western Avenue be fitted up with all needed conveniences whenever it shall appear that the water supply, as promised, has become a practical success.

### FUEL WAGONS.

Connected with the Department are two wagons used for the transportation of coal to the several engines when working at a fire for a longer period than one hour, each engine being required to carry a sufficient quantity of coal to last that time. The wagons are also found quite useful in exercising the horses, which is done every day, if pleasant. One of these wagons is located in a shed on Cherry Street; and the other, purchased this year, is stationed at the engine-house on Church Street. Wagons of the kind mentioned should also be furnished for Wards Three and Five.

### CHEMICAL FIRE APPARATUS.

Your attention has been called the present year to the claims of a patented chemical engine for the extinguishment of fires, which matter received due consideration on the part of the committee having charge of this Department, to which the subject was referred. It would not seem judicious to expend any great

amount of money for fire apparatus constructed solely upon a chemical basis; for, while not disparaging any apparatus of that kind, I have yet to learn of any wide-spread success attending this mode of extinguishing fires. While admitting the fact that annihilators or other chemical contrivances have been successfully used in the early stage of a fire, I am not a believer in their general utility. As the matter may again attract your notice, I will leave it for your considerate attention.

### HORSES IN THE DEPARTMENT.

There are fifteen horses connected with the Department, one of which is kept as a spare or relief horse, to perform work in making repairs upon the telegraph, packing fire hydrants, relieving sick horses, or performing such other work as may be required of him.

The several horses are in good condition, excepting the horses of Engine Two, and one horse on Engine Three. It will be necessary to replace the horses of Engine Two with younger and sounder animals, the present ones being too old and tender-footed for the service for any considerable length of time.

Three new horses have been purchased during the year, at an expense of $1,150, or a fraction over $383 each.

### FORCE OF THE DEPARTMENT.

The Department, as provided by ordinance, consists of one chief and four assistant engineers, five foremen, five assistant foremen, five enginemen, one of whom performs relief service, four drivers of engines, four drivers of hose carriages, one driver of ladder truck, thirty-six hosemen, sixteen ladder-men, and one telegraph operator, making a force of seventy-nine men.

To this may be added five persons who receive appointment to perform police duty at fires, and whose services are rewarded by payments from this Department for actual performance of duty. Although the numerical force is small, yet it requires more than one half of the entire appropriation to compensate the members for their services. This item of expense cannot be lessened; for, since the introduction of the paid system in all fire departments, men will not engage in the work of extinguishing fires without proper payment therefor. It must therefore be expected that the

pay of firemen, whose duties are both arduous and dangerous, must gradually increase from year to year, as the city augments in population and in wealth.

### ADMISSIONS AND DISCHARGES.

From December 18, 1870, to November 30, 1871, 44 persons were admitted to membership in the Department, and 65 were discharged, as follows: —

Admitted. No. One, 12; No. Two, 3; No. Three, 11; No. Four, 8; No. Four (Hand), 3; H. & L., 7. Total, 44.

Discharged. No. One, 12; No. Two, 2; No. Three, 10; No. Four, 8; No. 4 (Hand), 27; H. & L., 6. Total, 65.

Two vacancies now exist.

### ENGINE HOUSES.

The new house erected on Fourth Street, for Engine Three and the Police Department, was formally occupied on the fourth day of January, and is, for convenience, one of the best arranged engine-houses in this vicinity.

The house in which are located Engine Two and Truck One is wholly unsuitable, as is stated elsewhere, and should receive the earliest attention of the government. Should the proposition to make alterations on the engine-house in Church Street be carried out, the city would be the gainer; for, as it now stands, no facilities exist for the proper care of the hose, in keeping it in condition for immediate use. The same may also be said of the house in Ward Four. Engine House No. Four, on North Avenue, is in good condition, and only lacks a good stable.

### PROTECTION AGAINST FIRE.

Early in the year I called to the notice of the Committee on Fire Department the necessity of immediate action to prevent the construction of wooden buildings having no preventives against fire, many such buildings having been erected without partition-walls of brick, and with chimneys set upon bracket shelves in the upper stories. Your Committee considered the subject at length; and in a communication to your honorable Boards recommended the passage of an order authorizing his Honor the Mayor to petition the Legislature for a special act to

provide for the construction and inspection of buildings within the city limits. Such authority has been given, and the petition has been filed; and it is urgently hoped that a judicious law may be enacted to lessen the liabilities mentioned, and to protect the city against extensive conflagrations.

### FIRE-ALARM TELEGRAPH.

Very extensive changes have been made in the fire-alarm telegraph system during the year, — changes which are believed to be for the best interests of the city. Under a vote of the Committee on the Fire Department, who are charged with the entire management of this very important branch of the service, the system as first inaugurated has been so amended as to provide for all future extensions which may be made.

To retain the original signal-box locations, and yet provide means for the introduction of new boxes as the city increases in growth, the City Engineer kindly aided me in drawing lines throughout the entire city, and designating at proper intervals upon these lines situations for boxes to be located when required. His views of future needs coincided with my own; and, on presenting the measure to the Committee, it was adopted, and I was authorized to proceed with the work under the amended form.

That completeness should be observed, it was found necessary to change the numbers of the boxes already located, with a view of having as nearly as possible a uniformity of numbers throughout the city; that is, numbers were skipped, so that when a new box should be added in any locality it would have its proper place and number.

The telegraph wires formerly attached to poles on Cambridge Street, from Atwood's Corner to a point near Eighth Street, have been removed, and connected with the roofs and chimneys of buildings, permission having been kindly given by the owners of such buildings. The poles were removed from the street, and set in other localities to receive the wires used in the extension made during the past summer.

Under authority from your honorable Boards, six fire-alarm boxes have been added to those previously located, at an expense for the boxes of $1,500, making in all thirty-nine boxes now in service. In locating the boxes ordered this year, I took occasion

to select neighborhoods which seemed best adapted for their introduction; *i. e.*, where it appeared that accidental fires would be most likely to occur. For instance, the extensive printing-office, book-bindery, and car stables near Riverside, embracing a large amount of property, seemed to call for more direct protection in this manner than before existed. While considering present protection, the future was not overlooked; for the neighborhood within a few years will become a thickly settled community, and will then, as now, be provided with this very essential safeguard.

The signal-box which was located at the corner of River and Fremont Streets was removed to the corner of Pleasant and Short Streets, a location which was thought to be the best adapted for it. No other change of location has been made.

The telegraph continues to work satisfactorily, and has been the means not only of increasing the alacrity of the firemen and the saving of property, but it has been used in giving notice of but one session of the public schools on stormy days. The signal adopted for this purpose has been the striking of ten blows and repeat upon the bells, fifteen minutes before the close of the morning session.

I would call your attention to the necessity of providing increased accommodations for the battery now located in Engine House No. One, in Church Street. The present quarters are limited, without the possibility of obtaining more room unless further encroachments are made upon the already limited quarters of the engine company.

### FIRE RESERVOIRS.

A measure which failed of success in one branch of your honorable Council, I still consider of great importance, — that of constructing capacious, water-tight reservoirs at suitable points in the city; for, after the sad calamity in Chicago by which the water supply of that city was cut off, and a more recent case in Boston, it would seem that our city should be protected in this manner against any possible accident occurring to the Water Works.

Four reservoirs, owing to their decayed and dangerous condition, have been filled up and made solid by the Superintendent of Streets during the year. The reservoirs mentioned were con-

structed of wood many years since, and of course could not be expected to last forever. There are now several remaining in the city of the same construction, which are deemed dangerous for heavy vehicles to pass over, and which, if not reconstructed with masonry, must be filled up to guard against accidents. Under a change of ordinance, the care of all fire reservoirs in the city was transferred from the Street and Drain Departments to this Department; and under this change all repairs made during the year have been charged to the appropriation for this Department, which have involved an expenditure not hitherto borne by it.

### FIRE HYDRANTS.

During the year, the energetic Superintendent of the Water Works has heartily coöperated in the matter of locating fire hydrants in localities requiring additional water facilities. Notwithstanding the great amount of work performed by him, in the general extension of the works, he has been enabled to locate sixty fire hydrants, in places which seemed to demand them, and still retains a list for new ones, which must lie over until the opening of spring. There are now two hundred and ninety-five hydrants in service.

I would call your attention to the fact that the style of hydrants now in use is susceptible of improvement, inasmuch as it entails a large expense every year to protect them against frost, and to keep their covers clear of snow in the winter months. I would recommend the introduction of the "post" or "plug" hydrant, as being better adapted for fire purposes, and inexpensive, after once being set.

### FIRES AND ALARMS.

The number of fires and alarms has been unusually large during the year, but I am happy to say that no serious conflagration has visited our city.

For many weeks during the past summer grave fears were felt that, should a fire break out in one of the many closely built neighborhoods, a serious calamity would be the result; for the lack of rain and the continued drought had rendered all wooden structures particularly dry, and liable to rapid destruction when once on fire.

Through the interposition of Providence, and the prompt response of the firemen, fires have been subdued in localities wholly constructed of wood, and which would have furnished material for a sweeping conflagration. We have, therefore, much to rejoice over in our escape from the terrible experiences of less fortunate communities.

The Department has been called out for fires in the city, since December 18, 1870, to November 30, 1871, 69 times, and for fires out of the city 11 times; making the total number of calls 80, an increase of 34 since the last report. Several fires have also been extinguished by the firemen and the police without creating alarm.

The Department has rendered service in Somerville, Brighton, Belmont, Arlington, and Charlestown, and has received assistance from Boston, Brighton, Brookline, and Somerville.

### LOSSES AND INSURANCE.

The loss by fire, for the year commencing December 18, 1870, and ending November 30, 1871, has amounted, as near as could be ascertained, to the sum of $127,300. The amount of insurance risk upon the property destroyed or damaged was $124,325; loss over insurance, $2,975.

The principal losses occurred by the burning of a building owned by the New England Glass Company, on the twenty-fifth day of December, 1870; the burning of a furniture warehouse owned by Mr. F. Geldowski, on the twenty-second day of January, 1871; a fire in the machine shop of George W. Rawson & Co., on the twenty-first day of March; and the destruction of property on the premises of the Boston Stamping Company, on the seventh day of June. The aggregate of loss at these fires alone was $104,600, or more than three quarters of the whole loss during the year.

In two of the instances cited, a large proportion of the loss was occasioned by the destruction of valuable dies and patterns; and, in the other cases, stocks of manufactured goods and machinery, principally injured by water, swelled the amount of loss sustained.

### ACCIDENTS.

I am happy in saying that no serious accident has befallen any member of the Department, while in the performance of duty, during the year. On the twenty-fifth day of December, 1870, James S. Casey, driver of Engine Three, received a painful injury to his right hand, while engaged in oiling the machinery of the engine at the fire on the premises of the New England Glass Company.

At the burning of Cooper's soap factory, on the eighteenth day of May, 1871, the Chief Engineer received a very severe sprain of his right foot, by stumbling over a pile of foundation stones.

On the twenty-sixth day of May, Conrad D. Kinnear, while volunteering assistance at a fire on Hunting Street, was struck in the eye by a stream of water, and somewhat injured.

Assistant Foreman C. J. Donovan, of Engine Three, received injuries about the head by the falling of a hoisting roller, at the fire on Third Street, on the night of June 7.

John W. Downing, a member of the Hook and Ladder Company, in endeavoring to descend from the truck, on the occasion of the alarm from Box Two, October 9, received a very painful wound in the fleshy part of his arm, by coming in contact with the hook on a lantern bracket attached to the truck.

William H. Emery, while running to an alarm of fire from Box Seventy-eight, on the morning of November 12, fell upon the frozen ground, badly lacerating his hands, and incapacitating him for work for a few days.

### DESIGNATION OF ALARMS.

A list of the signal-boxes is here presented, which have been used in giving alarms during the year: —

| | |
|---|---|
| Box 2 has been struck 3 times. | Box 13 has been struck 1 time. |
| " 3 " " " 4 " | " 14 " " " 5 " |
| " 5 " " " 4 " | " 15 " " " 2 " |
| " 6 " " " 3 " | " 16 " " " 1 " |
| " 7 " " " 5 " | " 21 " " " 1 " |
| " 8 " " " 4 " | " 24 " " " 1 " |
| " 9 " " " 4 " | " 25 " " " 5 " |
| " 12 " " " 5 " | " 26 " " " 2 " |

Box 28 has been struck 2 times.
" 35 " " " 1 "
" 36 " " " 3 "
" 41 " " " 1 "
" 42 " " " 2 "
" 51 " " " 1 "
" 52 " " " 1 "
" 53 " " " 1 "

Box 54 has been struck 1 time.
" 59 " " " 1 "
" 65 " " " 1 "
" 68 " " " 1 "
" 69 " " " 4 "
" 72 " " " 3 "
" 78 " " " 1 "
" 82 " " " 2 "

Boxes 8 and 36 were also struck to give exhibitions of the working of the Fire Alarm Telegraph.

## CLASSIFICATION OF FIRE ALARMS.

The following table will show the number of alarms for each day of the week, and each month in the year, beginning December 18, 1870, and ending November 30, 1871 : —

| 1870-71. | Dec. | Jan. | Feb. | Mch. | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sunday . . | 2 | 3 | | | 1 | 1 | | 5 | 1 | | | 1 | 14 |
| Monday . . | | | | 1 | 1 | 2 | 2 | 4 | 1 | | 2 | 2 | 15 |
| Tuesday . . | | 1 | 2 | 5 | | 2 | 1 | 2 | 1 | 2 | 1 | | 17 |
| Wednesday . | 1 | 1 | | 1 | | | 2 | | | 1 | | | 6 |
| Thursday . | | 1 | | | 1 | 1 | | | 3 | 2 | 1 | | 9 |
| Friday . . | | 1 | 1 | 1 | | 1 | | 1 | | | 3 | 2 | 10 |
| Saturday . | | 1 | 1 | | | 1 | 2 | 2 | | 2 | | | 9 |
| Total . . | 3 | 8 | 4 | 8 | 3 | 8 | 7 | 14 | 6 | 7 | 7 | 5 | 80 |

## ACKNOWLEDGMENTS.

I should be recreant to the trust reposed in me, did I fail to express my thanks, on behalf of the City and the Fire Department, to the Departments of the adjoining cities and towns, for the valuable services rendered at fires in this City, and for other favors no less appreciated.

To Chief Engineer Damrell of Boston, Chief Engineer Magoun of Charlestown, and Chief Engineer Sanborn of Somerville, for the loan of apparatus while our own has been undergoing repairs, I extend my heartfelt acknowledgments, and express the hope that nothing may prevent a continuance of the good feeling which should always exist between our City and its neighbors.

The opportunity also presents itself for the expression of my warmest thanks to both branches of the City Council for their ready indorsement of all measures tending toward the general good of the Department.

The Board of Engineers, the officers and members of the several companies, and the fire and regular police forces, will also accept my acknowledgments for their prompt responses to duty, and their ready coöperation at all times.

Respectfully submitted.

PATRICK H. RAYMOND,
*Chief Engineer.*

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# APPENDIX.

## Committee on Fire Department.

| | |
|---|---|
| Aldermen . . . . . | Parker and Holman. |
| Councilmen . . . . . | Chaffee, Hall, and Clarke. |

## Board of Engineers.

| Name. | Age. | Residence. | Occupation. |
|---|---|---|---|
| Patrick H. Raymond, Chief . . | 41 | 20 Jay Street . . . | Reporter. |
| Thomas J. Casey . 1st Assistant | 38 | — Cambridge Street | Carver. |
| Joseph H. Marvin . 2d " | 38 | 128 Pearl Street . . | Builder. |
| Albert Norris . . . 3d " | 41 | 34 Western Avenue . | " |
| Edward F. Belcher . 4th " | 30 | 40 Holyoke Street . | Saloon-keeper. |
| Joseph H. Marvin . Secretary. | | | |

## Cambridge Steam Fire Engine Company, No. 1.

*House on Church Street.*

This engine was built by the Amoskeag Manufacturing Company, Manchester, N. H., and is rated as second class. It is supplied with one steam cylinder $8\frac{1}{2}$ inches in diameter; one double-acting vertical plunger pump $4\frac{3}{4}$ inches in diameter, with 12-inch stroke. The engine is supplied with two copper tanks, which contain a supply of fresh water, to be used when drafting sea water. The engine, when worked to its full capacity, will discharge 400 gallons per minute.

Put in service September 18, 1864.

| Names of Members. | No. Badge. | Age. | Occupation. |
|---|---|---|---|
| John Kinnear, *Foreman* | 1 | 35 | Inspeetor of Customs. |
| George J. Blaisdell, *Assistant Foreman* | 2 | 27 | Upholsterer. |
| Edward E. Priest, *Engineer* | 3 | 34 | Engineer. |
| George Cooley, *Fireman* | 4 | 39 | Carpenter. |
| Hiram W. Hooker, *Driver of Engine* | 5 | 33 | Driver. |
| Jaeob A. Holt, *Driver of Hose Carriage* | 6 | 41 | Driver. |
| James E. Brennan, *Hoseman* | 7 | 24 | Upholsterer. |
| William H. Emery, " | 8 | 38 | Printer. |
| Hugh MeNamee, " | 9 | 42 | Painter. |
| William Rent, " | 10 | 24 | Printer. |
| Conrad D. Kinnear, " | 11 | 33 | Clerk. |
| Benjamin S. Watts, " | 12 | 38 | Painter. |
| Frank P. Seanlan, " | 13 | 25 | Painter. |
| Robert T. Hixon, " | 14 | 27 | Carpenter. |

## Union Steam Fire Engine Company, No. 2.

*House on Main Street, near Winsor.*

This engine is of the same style of construction as No. 1, and was also built by the Amoskeag Manufacturing Company, and put in service August 1, 1863.

| Names of Members. | No. Badge. | Age. | Occupation. |
|---|---|---|---|
| William B. Cade, *Foreman* | 15 | 37 | Polisher. |
| Charles A. Paine, *Assistant Foreman* | 22 | 30 | Wood Moulder. |
| William Niekelson, *Engineer* | 17 | 48 | Engineer. |
| Amos B. Jarvis, *Fireman* | 24 | 28 | Paper Collar Cutter. |
| John H. Walker, *Driver of Engine* | 19 | 42 | Driver. |
| Joseph P. Cartwright, *Driver of Hose Carriage* | 20 | 35 | Driver. |
| Charles E. Snow, *Hoseman* | 26 | 28 | Painter. |
| William H. Foss, " | 27 | 31. | Aetion Maker. |
| Jesse W. Haley, " | 16 | 28 | Engineer. |
| Arthur C. Day, " | 25 | 33 | Box Maker. |
| Edmund F. Foss, " | 23 | 33 | Carpenter. |
| Richard F. Tobin, " | 18 | 27 | Iron Moulder. |
| Daniel McCarty, " | 21 | 32 | Blaeksmith. |
| James Cunningham, " | 28 | 29 | Wood Turner. |

## Niagara Steam Fire Engine Company, No. 3.

*House on Fourth Street.*

This engine, like Nos. 1 and 2, was built by the Amoskeag Manufacturing Company in 1862, and is therefore the oldest in the city. Being situated in a large manufacturing district, which is steadily increasing in growth, the engine has been somewhat curtailed in the performance of duty in other parts of the city; that is, since the introduction of the fire-alarm telegraph, the attendance of the engine beyond a certain district has not been required, except in cases where a second alarm has been given for the same fire.

It is expected that, before the first day of January, 1872, a larger engine will be substituted for the present No. 3, the City Council having passed an order to that effect.

With the introduction of the new engine, the old apparatus will be held in reserve for relief purposes.

| Names of Members. | No. Badge. | Age. | Occupation. |
|---|---|---|---|
| William W. Winward, *Foreman* | 38 | 24 | Insurance Agent. |
| Cornelius J. Donovan, *Assistant Foreman* | 36 | 28 | Wood Worker. |
| Hiram Blood, *Engineer* | 31 | 39 | Engineer. |
| Charles E. Berry, *Fireman* | 30 | 23 | Machinist. |
| James S. Casey, *Driver of Engine* | 33 | 35 | Driver. |
| Lorenzo H. Dale, *Driver of Hose Carriage* | 34 | 29 | Driver. |
| Thomas J. Dale, *Hoseman* | 42 | 30 | Fish Dealer. |
| Michael G. Collins, " | 37 | 27 | Painter. |
| J. D. De Ronde, " | 39 | 32 | Carver. |
| Samuel N. Dustin, " | 35 | 31 | Blacksmith. |
| George W. Butler, " | 40 | 28 | Carpenter. |
| John Casey, " | 41 | 21 | Britannia Worker. |
| James Nicol, " | 32 | 30 | Saloon-keeper. |
| James H. Berry, " | 29 | 27 | Carpenter. |

## Daniel Webster Steam Fire Engine Company, No. 4.

*House on North Avenue, near Russell Street.*

This engine is of the double pump, second class, small size pattern, with $4\frac{1}{8}$-inch pump cylinders, and 8-inch stroke, steam

cylinders 6⅞-inch diameter and 8-inch stroke; and, without fuel or water, in weight 5,800 pounds. It was built by the Amoskeag Manufacturing Company, of Manchester, N. H., and put in service May 28, 1869.

| Names of Members. | No. Badge. | Age. | Occupation. |
|---|---|---|---|
| Daniel O'Connell, *Foreman* | 43 | 35 | Clerk. |
| Dana R. Hovey, *Assistant Foreman* | 44 | 32 | Clerk. |
| John E. Ricker, *Engineer* | 45 | 27 | Engineer. |
| Abiel E. Long, *Fireman* | 46 | 26 | Wheelwright. |
| George T. Presby, *Driver of Engine* | 47 | 28 | Driver. |
| George E. Muzzey, *Driver of Hose Carriage* | 48 | 29 | Driver. |
| John F. Cook, *Hoseman* | 50 | 25 | Carpenter. |
| Charles E. Presby, " | 51 | 36 | Mason. |
| Harmon Parsons, " | 52 | 31 | Carpenter. |
| William P. Cutler, " | 54 | 28 | Currier. |
| Charles H. Farwell, " | 55 | 41 | Merchant. |
| John W. Holbrook, " | 56 | 29 | Carriage Trimmer. |

The hose carriages which accompany Nos. 1, 2, and 3 are drawn by horses, and have two wheels, while that which accompanies Engine 4 has four wheels. The several carriages were built by Hunneman & Co., of Boston.

## Franklin Hook and Ladder Company, No. 1.

*House on Main Street, near Winsor.*

This apparatus is drawn to fires by horses, and is lacking in suitable appendages. As mentioned elsewhere, it is impossible to add longer ladders to the truck, owing to the condition of the building in which the carriage is stationed.

The truck is set upon wheels altogether too low for an easy draught to the horses, but which were selected for the reason that the height of the room would not allow the use of wheels of a larger pattern.

The driver's seat is necessarily quite elevated, — so much, indeed, as to prevent him from occupying it until the apparatus leaves the building, at which time he climbs up over the ladders to it. Although this course has been followed for some

time, yet it is a most dangerous one, as the driver is liable to drop a rein in making the ascent, thereby giving free scope to his horses beyond his control and management.

It is desired that something may be done to improve this condition of affairs before a terrible accident becomes the consequence.

| Names of Members. | No. Badge. | Age. | Occupation. |
|---|---|---|---|
| James P. Ewell, *Foreman* | 62 | 35 | Piano-forte key Maker. |
| Charles Emerson, *Assistant Foreman* | 69 | 26 | Confectioner. |
| George W. Lamson, *Driver* | 59 | 30 | Driver. |
| Lewis C. Clark, *Ladder-man* | 71 | 26 | Confectioner. |
| Charles S. Abbott, " | 65 | 31 | Box Maker. |
| James R. Bowlby, " | 58 | 24 | Blacksmith. |
| Charles H. Wiggin, Jr., " | 70 | 23 | Furniture Polisher. |
| John W. Downing, " | 68 | 28 | Hostler. |
| Elisha W. Morey, " | 61 | 24 | Furniture Finisher. |
| Edward C. Hiscock, " | 64 | 23 | Grocer. |
| Daniel S. Mitchell, " | 57 | 34 | Photographer. |
| William H. Lydston, " | 58 | 24 | Carpenter. |
| Hamilton Porter, " | 63 | 28 | Machinist. |
| George Butcher, " | 72 | 24 | Piano-key Finisher. |
| Charles H. Waite, " | 73 | 25 | Flour Dealer. |
| Edward F. Chase, " | 67 | 26 | Pressman. |
| Daniel G. Hill, " | 60 | 35 | Confectioner. |

## Schedule of Property owned by the City,

And in possession of Engine Companies Nos. 1, 2, 3, and 4, Hook and Ladder Co. No. 1, and the Fire Alarm Telegraph.

*Return of Engine Company No.* 1, *for November* 30, 1871.

The following inventory of property owned by the City of Cambridge, and in charge of this Company, is correct: —

1 second-class steam fire-engine, with equipments.
1 two-wheeled hose-carriage, with equipments.
1200 feet leather hose, ordinary.
500 feet leather hose, good.
150 feet rubber hose, good.
4 horses, in good condition.
1 set double harness.
1 single harness, new.
1 single harness, ordinary.
1 riding saddle.
16 fire hats.
4 iron bedsteads.
8 mattresses, and complement of bedding.
1 parlor set, with extra pieces.
Carpeting and mats.
Window curtains and fixtures.

Extra goose-necks, wrenches, etc.
Stable equipments in full.
1 set engine runners.
Iron and wooden shovels.
1 copper boiler.
1 bench vise.
50 feet hand hose and pipe.
3 stable blankets.
3 service blankets.
1 quire emery cloth.
2 stoves, coal hods, and fire-shovels.
2 wagon-jacks.
1½ tons cannel coal.
Hay and grain.
1 jack-screw.
2 sets lead reins.
1 set lead bars.
2 tables.
Tin measures, baskets, office chairs, etc.

E. E. PRIEST,

*Engineer S. F. E. No.* 1.

*Return of Engine Company No.* 2, *for November* 30, 1871.

The following inventory of property owned by the City of Cambridge, and in charge of this Company, is correct:—

1 second-class steam fire-engine, with equipments.
1 two-wheeled hose-carriage, with equipments.
800 feet leather hose, good.
750 feet leather hose, inferior.
100 feet rubber hose, good.
100 feet rubber hose, inferior.
3 horses, one in good condition.
1 set double harness.
2 single harnesses.
2 shovels, 1 telegraph gong.
1 water bucket.
Stable equipments complete.
6 horse blankets.
15 fire hats.
16 sheets, 12 pillow-cases.
4 blankets, 4 comforters.
2 brooms, 2 pictures.
1 roll-board.
1 hammer.
1 monkey-wrench.
2 stoves.
6 new office chairs.
2 copper boilers.
1 coal hod.
1 looking-glass.
1 set parlor furniture.
4 iron bedsteads.
75 feet hydrant hose and pipe.
1 riding saddle.
1 quire emery cloth.
Polishing materials.
1 set old wheels.
1 set engine runners.
Window curtains and fixtures.
Hay and grain, with necessary measures, cans, oils, etc.

WILLIAM NICKELSON,

*Engineer S. F. E. No.* 2.

*Return of Engine Company No.* 3, *for November* 30, 1871.

The following inventory of property owned by the City of Cambridge, and in charge of this Company, is correct:—

1 second-class steam fire-engine, with equipments.
1 two-wheeled hose-carriage, with equipments.
500 feet leather hose, good.
950 feet leather hose, poor.
50 feet rubber hose, good.
50 feet rubber hose, poor.
3 horses, two in good condition.
1 set double harness.
1 single harness.
2 riding saddles.
Stable equipments complete.
3 iron shovels.
Hydrant and other wrenches.
16 spanners and belts.
14 hats (new).
3 stable blankets.
3 service blankets.
8 hose ropes.
4 iron bedsteads (spare).
1 set parlor furniture.
4 chamber sets.
8 mattresses.
16 sheets, pillow-cases, etc.
4 woolen chamber carpets.
12 rubber spittoons.
1 clock.
1 dozen hard wood office chairs.
1 pair leading traces.
2 roll-boards.
5 lanterns.
1 quire emery cloth.
10 gallons lubricating oil.
1 barrel neat's foot oil.
5 two-quart cans.
1 reducing suction coupling.
2 axes.
50 feet hand hose and pipe.
1 copper boiler.
1 wheelbarrow.
1 hoe.
4 feather dusters and brushes.
1 bench vise.
1 spare valve rod.
1 set spare grates for engine.
1 short ladder.
1 wagon-jack.
4 water-buckets.
1 spare axle.
2 spare hose-carriage wheels.
1 set engine runners.
5 entry and door-mats.
2 stair carpets.
2 dozen bathing towels.
1 set of hoisting tackle.
3 bundles hay.
1 grain-chest and grain.
2 extra goose-necks.
10 window shades and fixtures.
25 pounds cotton waste.
1 spare whiffletree.
2 tons cannel coal.
Hard coal, etc.

HIRAM BLOOD,

*Engineer S. F. E. No. 3.*

*Return of Engine Company No. 4, for November 30, 1871.*

The following inventory of property owned by the City of Cambridge, and in charge of this Company, is correct: —

1 second-class steam fire-engine, with equipments.
1 four-wheeled hose-carriage, with equipments.
1400 feet leather hose, ordinary condition.
200 feet rubber hose, good condition.
100 feet cotton hose, worthless.
50 feet cotton hose, ordinary condition.
3 horses, in sound condition.
4 stable blankets.
1 telegraph gong.
3 service blankets.
3 fly blankets.
3 surcingles.
1 set double harness.
1 single harness.

2 tons cannel coal.
Lot anthracite coal.
2 tin waist cans.
2 pounds rotten stone.
1 gallon benzine.
1 ironpot.
1 packing cutter.
1 pound emery.
1 quire emery cloth.
Steel letter-dies.
Files and handles.
2 bunches hemp.
3 oil-pans.
2 oil-brushes.
3 axes.
1 hatchet.
1 lamp.
1 riding saddle.
1 riding bridle.
3 halters.
1 four-quart measure.
1 set hoisting tackle for stable.
Stable tools complete.
5 bales hay.
1 bale straw.
60 feet hand hose and pipe.
6 bushels grain, and chest.
Half cord pine wood.
15 fire hats, new.
14 fire hats, worthless.
13 hose ropes.
10 spanners and belts.
3 baskets.
3 snow shovels.
2 brooms.
1 dust-pan.
1 brush.
1 feather duster.
6 arm-chairs.
6 office chairs.
1 table.
1 clock.
2 match safes.
3 stoves and pipe.
1 water-pot.
3 door-mats.
1 bench vise.
3 one-gallon cans.
2 two-gallon cans.
3 five-gallon cans.
1 gallon sperm oil.
1 gallon kerosene oil.
5 gallons neat's foot oil.
1 snow plow.
4 iron bedsteads.
8 mattresses.
8 blankets.
4 comforters.
Sheets and pillow-cases.
1 bureau and glass.
18 cane seat chairs.
1 parlor set.
15 pictures and frames.
2 looking-glasses.
1 desk and table.
1 silver trumpet.
1 flag.
16 window curtains and fixtures.
3 woolen carpets.
8 settees.
1 50-feet splice ladder.
1 35-feet splice ladder.
1 26-feet splice ladder.
2 step-ladders.
1 wagon-jack.
1 H. & L. carriage, worthless.
1 fire-hook and pole, with miscellaneous articles of small value.

JOHN E. RICKER,

*Engineer S. F. E. No.* 4.

*Return of Hook and Ladder Company No.* 1, *for November* 30, 1871.

The following inventory of property owned by the City of Cambridge, and in charge of this Company, is correct:—

1 ladder carriage, in ordinary condition.
1 50-feet splice ladder.
1 36-feet splice ladder.
2 30-feet ladders.
1 25-feet ladder.
1 22-feet ladder.
1 20-feet ladder.
2 17-feet ladders (roof).
2 15-feet ladders (roof).
1 10-feet ladder (roof).
7 crotch poles.
2 hand hooks.
2 frame hooks with chains.
4 axes.
4 lanterns (ordinary).
2 guy ropes.
1 hook rope.
2 street ropes with iron stakes.
1 sledge hammer.
1 carpenter's hammer.
3 rakes (one tine).
2 rakes (three tines).
8 pitchforks.
4 ladder dogs and belts.
5 buckets (poor).
1 reservoir wrench.
6 short straps.
2 oil-cans.
22 fire hats.
2 iron bedsteads.
2 stable and 2 service blanket
4 bed blankets and necessary bedding.
20 common chairs.
6 arm-chairs.
2 tables.
2 stoves, 2 copper boilers.
1 set traverse runners.
3 ladders not in service, and other articles of a miscellaneous character.

GEO. W. LAMSON,

*Driver Franklin Hook and Ladder Carriage.*

*Return of Property in charge of Telegraph Operator, November* 30, 1871.

BATTERY STATION, ENGINE HOUSE NO. 1, CHURCH STREET.

4 telegraphic repeaters.
5 galvanometers.
1 switch board.
150 battery cups.
150 zincs for battery.
4 church-bell strikers.
10 insulators and wire.
4 pike poles.
1 iron bar.
1 post shovel.
1 pair pliers.
1 saw.
1 wire reel.
70 pounds wrought nails.
30 feet Kerite wire.
100 pounds blue vitriol.
1 gas stove in battery room.
5 engine-house gongs.
8 engineers' and police-station gongs.
1 call bell.
39 street signal-boxes.
25 miles telegraph wire.
20 cross arms.
200 street poles.
2 ropes.
2 screw-drivers.
1 shovel.
1 vise and strap.
1 hatchet.
17 brackets for chimneys, etc.
1 pair pole climbers.
1 gimlet.
1 syringe.

THOMAS J. LEIGHTON,

*Telegraph Operator.*

## RECAPITULATION.

| | | | |
|---|---|---|---|
| Number of Engineers | | | 5 |
| Members | | | 73 |
| Fire Police | | | 5 |
| Steam Fire Engines | | | 4 |
| Hand Engine | | | 1 |
| Horses | | | 15 |
| Horse Hose Carriages | | | 4 |
| Hand Hose Carriages | | | 2 |
| Feet of Leading Hose | | | 6,900 |
| H. & L. Carriage | | | 1 |
| Ladders | | | 20 |
| Large Hooks with Chains | | | 5 |
| Hand Hooks with Poles | | | 4 |
| Fire Rakes | | | 5 |
| Pitchforks | | | 8 |
| Crotch Poles | | | 7 |
| Fire Hats | | | 82 |
| Reservoirs | | | 57 |
| Hydrants | | | 295 |
| Alarms from fires in the city | | 69 | |
| Alarms from fires out of city | | 11 | |
| | | — | 80 |
| Loss on Buildings and Stock | $127,300 | | |
| Insurance on Losses | 124,325 | | |
| Total Loss | $2,975 | | |

# FIRES AND ALARMS FROM DECEMBER 18, 1870, TO NOVEMBER 30, 1871.

| | Date. | Hour. | Box. | Owners of Building. | Occupants. | Location. | Loss. | Insurance. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| | 1870. | | | | | | | | |
| Sunday . | Dec. 25 | 1.30 A. M. | 5 | New Eng. Glass Co. | New England Glass Co. | North Street . | $20,000 | $20,000 | Overheated furnace. |
| Sunday . | 25 | 1.35 A. M. | 5 | Do., second alarm . | | | | | |
| Wednesday | 28 | 5.30 P. M. | 5 | Eagle Sugar Refinery Co. | Eagle Sugar Refinery Co. | Water Street . | 300 | 300 | Overheated tanks. |
| Wednesday | 28 | 5.35 P. M. | 5 | Do., second alarm. | | | | | |
| | 1871. | | | | | | | | |
| Friday . . | Jan. 6 | 11.30 P. M. | 52 | | Unknown . . . . | Arlington . . | Unknown | Unknown | No. 4 of this city was present. |
| Saturday . | 7 | 4.45 P. M. | 15 | Mrs. Holden . . . | Samuel Hicks . . . | Washington St. | Trifling. | – | Burning of clothing in closet. |
| Sunday . | 8 | 11.50 A. M. | 51 | A. H. Hews & Co. . | A. H. Hews & Co. . | Dwight Street . | Trifling. | – | Overheated kiln in pottery. |
| Tuesday . | 10 | 3.45 A. M. | 36 | Harvard College . | Students . . . . . | Harvard Square | Trifling. | – | Coal falling from grate. |
| Thursday . | 12 | 8.00 P. M. | 6 | S. P. Holbrook . . | Boston Chem'l Works | Cambridge St. . | 120 | 120 | Overheated stoves. |
| Sunday . | 22 | 2.05 A. M. | 3 | Ferdinand Geldowski. | Ferdinand Geldowski | Otis Street . . | 40,000 | 40,000 | Spontaneous combustion. |
| Sunday . | 22 | 2.10 A. M. | 3 | Do., second alarm . | | | | | |
| Wednesday | 25 | 7.30 A. M. | 6 | Joseph Metzger . . | Joseph Metzger . . | Seventh Street . | Trifling. | – | Drying plastering. |
| Tuesday . | Feb. 12 | 2.30 P. M. | 7 | —— Ricker . . . | Unoccupied . . . . | Norfolk Street . | Trifling. | – | Drying plastering. |
| Friday . . | 17 | 1.30 A. M. | Bell alarm. | J. P. Clark . . . | J. P. Clark . . . . | Madison Street | 200 | 200 | |
| Saturday . | 18 | 7.50 A. M. | 42 | Mrs. James Quigley | Mrs. James Quigley . | Irving Place . | – | – | Burning of chimney. |
| Tuesday . | 21 | 9.00 P. M. | 14 | Michael Rourke. . | M. Rourke and others | Harvard Street | 650 | 650 | Burning of barn and portion of block. Accidental. |
| Monday . | March 6 | 8.00 A. M. | 25 | Babcock & Co. . . | Babcock & Co. . . . | Brighton . . | – | – | Cause unknown. Engines were present from this city. |
| Friday . . | 10 | 1.20 A. M. | 12 | Kendall & Roberts | Kendall & Roberts . | Main Street. . | Trifling. | – | Hot iron on floor in boiler manufactory. |
| Tuesday . | 14 | 10.00 A. M. | 42 | Abel Stevens . . . | Abel Stevens . . . | Mt. Auburn St. | Trifling. | – | Sparks from chimney. |
| Wednesday | 15 | 5.30 A. M. | 8 | Town of Somerville | Primary School . . | Somerville . . | – | – | Nos. 1, 2, and 3, and the H. and L. were present. |
| Tuesday . | 21 | 11.30 P. M. | 12 | Kendall & Roberts | G. W. Rawson & Co. | Main Street. . | 13,900 | 13,900 | Probably caused by spontaneous combustion in oil-waste in machine-shop. |
| Tuesday . | 21 | 11.40 P. M. | 12 | Do., second alarm. | | | | | |
| Tuesday . | 28 | 9.30 A. M. | 25 | Varnish Works . . | Valentine & Co. . . | Brighton . . | – | – | Overheated stove. Engines were present from this city, and also the H. and L. |
| Tuesday . | 28 | 2.00 P. M. | 25 | Do., second alarm. | | | – | – | Rekindling of ruins. |
| Thursday . | April 6 | 3.00 P. M. | Bell alarm. | Cornelius Sweeney . | Cornelius Sweeney . | Sixth Street . | Trifling. | – | Burning of clothing; bell alarm only in Ward 3. |
| Monday . | 24 | 7.15 A. M. | 26 | James A. Woolson . | James A. Woolson . | Harvard Street | 450 | 275 | Overheated stove-pipe. |
| Sunday . | 30 | 8.30 A. M. | 7 | Terence Murphy . | Terence Murphy . . | Willow Place . | Trifling. | – | Cause unknown. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Saturday . | May 6 | 11.30 A. M. | 16 | Charles A. Sawyer . | Charles A. Sawyer . John A. Boyyer. | Main Street . | $500 | $500 | Ignition of jute in upholstery of Mr. Boyyer. |
| Sunday . | 14 | 5.30 A. M. | 14 | —— Penniman . . | N. D. Kenniston . . | Winsor Street | 20 | 20 | Burning of bed. |
| Monday . | 15 | 5.30 P. M. | 14 | Matthew Brooks . | J. L. Buffum & others | Harv. cor. Clark | 25 | 25 | Sparks from chimney on roof. |
| Tuesday . | 16 | 12.30 P. M. | 36 | Philip Nutting . . | J. H. Wyeth & others | Brattle Street . | Trifling. | – | Sparks from tinman's furnace. |
| Thursday. | 18 | 9.20 P. M. | 25 | Wm. Cooper & Son | Wm. Cooper & Son . | Fremont Street | 4,800 | 2,400 | Boiling over of kettle of tallow in soap factory. |
| Monday . | 22 | 10.40 P. M. | 6 | P. Callahan . . . | P. Callahan . . . . | Cambridge St. . | Trifling. | – | Burning of hay in stable. |
| Friday . . | 26 | 6.30 P. M. | 7 | J. Schular . . . | J. Schular . . . . | Hunting Street | 600 | 600 | Cooper's shop. Cause of fire unknown. |
| Tuesday . | 30 | 11.30 A. M. | 53 | Morris Landers . . | Morris Landers . . | Rice Place . . | Trifling. | – | Burning of bed. |
| Wednesday | June 7 | 9.40 P. M. | 12 | Seavey & Co. . . | Seavey & Co. . . . | Third Street . | 30,700 | 30,700 | Supposed spontaneous combustion among rags used for japanning purposes. |
| Wednesday | 7 | 9.50 P. M. | 12 | Do., second alarm. | | | | | |
| Saturday . | 10 | 12.30 P. M. | 15 | John Menix . . . | John Menix. . . . | Brewery Street | Trifling. | – | Overheated stove-pipe igniting wood-work. |
| Saturday . | 10 | 8.10 P. M. | 9 | Lincoln & Co. . . | Lincoln & Co. . . . | Third Street . | Trifling. | – | Burning of refuse material at kerosene works. |
| Monday . | 19 | 6.30 P. M. | 3 | F. & D. Draper . . | F. & D. Draper . . | Otis Street . . | 7,500 | 7,500 | Sparks from forge in Britannia manufactory. The damage to building by fire did not exceed $1,000, while that to stock by fire and water was quite large. |
| Monday . | 19 | 6.40 P. M. | 3 | Do., second alarm. | | | | | |
| Tuesday . | 20 | 11.30 P. M. | 7 | A. H. Stevens, Jr. . | William Woods . . | Elm Street . . | 800 | 600 | Sparks from blacksmith's forge among kindling material. |
| Monday . | July 3 | 4.20 P. M. | 7 | Samuel Conlan . . | Samuel Conlan. . . | Webster Avenue | Trifling. | | Small shed set on fire by children playing with matches. |
| Friday . . | 7 | 5.45 P. M. | 13 | Bay State Glass Co. | Bay State Glass Co. . | Bridge Street . | Trifling. | – | Burning of straw in packing-room. |
| Saturday . | 8 | 4.30 P. M. | 14 | C. M. Stratton . . | Matthias Fleck . . . | Eighth Street . | Trifling. | – | Combustibles set on fire in shed by children. |
| Sunday . | 9 | 5.00 P. M. | 21 | Hancock & Greely . | Hancock & Greely . | Western Avenue | Trifling. | – | Spontaneous combustion in oily sawdust near steam-engine. |
| Monday . | 10 | 6.30 P. M. | | Alarm . . . . . | . . . . . | . . . . . | – | – | Breaking of telegraph cable which crosses Broad Canal, a vessel's keel coming in contact with it, thus causing the bells and gongs to strike. |
| Tuesday . | 11 | 12.40 P. M. | 69 | Pickle Preserving Establishment. | Pickle Preserving Establishment. | Somerville . . | – | – | Engines were present from this city, and rendered assistance. |
| Saturday . | 15 | 1.40 P. M. | 9 | George W. Felt . . | Geo. W. Felt & others | Bridge Street . | Trifling. | – | Shingles on roof of wheelwright shop caught fire from sparks. |
| Sunday . | 16 | 2.00 P. M. | 69 | John Davenport . | Charles H. Blanchard | Beech Street . | 300 | 300 | Children playing with matches in stable. |
| Monday . | 17 | 10.00 P. M. | | Alarm . . . . . | . . . . . | . . . . . | – | – | Ringing of bells caused by malicious interference with the telegraph wires, which called out a portion of the department. |
| Sunday . | 23 | 10.10 A. M. | 8 | Bridget Brady . . | Several Families . . | Vine Street . . | Trifling. | – | Defect in stove-pipe. No. 3 in service. |
| | | | | | *Amount* | *carried forward* | $120,865 | $118,090 | |

## FIRES AND ALARMS FROM DECEMBER 18, 1870, TO NOVEMBER 30, 1871. — *Continued.*

| | Date. | Hour. | Box. | Owners of Building. | Occupants. | Location. | Loss. | Insurance. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Amount brought forward* | | $120,865 | $118,090 | |
| Sunday . | July 23 | 11.00 P. M. | 9 | J. L. Bailey . . . | J. L. Bailey & others | Cambridge St. . | 4,300 | 4,300 | Supposed incendiary origin, the fire being first discovered among a lot of excelsior in Mr. Bailey's furniture warerooms. |
| Monday . | 24 | 9.00 P. M. | 8 | Hugh Campbell . | Hugh Campbell . . | Third Street . | Trifling. | – | Cause unknown. |
| Tuesday . | 25 | 7.50 A. M. | 26 | Martin Conners . . | Frank Maguire . . . | School Street . | Trifling. | – | Children playing with matches set on fire a small quantity of clothing. |
| Sunday . | 30 | 7.00 A. M. | 24 | Michael Fallon . . | M. Fallon and others | Brookline St. . | Trifling. | – | Bed set on fire with sparks from a tobacco pipe. |
| Thursday . | Aug. 3 | 12.15 A. M. | 72 | Michael Lyons . . | Several occupants . . | Montgomery St. | 1,300 | 1,300 | Supposed incendiary origin, a barn being set on fire, and destroyed, and considerable injury done to a dwelling-house adjacent. |
| Thursday . | 3 | 12.20 A. M. | 72 | Do., second alarm . | | | | | |
| Thursday . | 3 | 3.30 P. M. | 28 | . . . . . | . . . . . | Portland Street | – | – | Marsh hay set on fire by boys. |
| Monday . | 7 | 12.15 P. M. | 28 | Tower & Co. . . | Tower & Co., & others | Broadway . . | Trifling. | – | Burning of shavings in boiler-room connected with picture-frame manufactory. |
| Sunday . | 13 | 10.50 P. M. | 68 | . . . . . | . . . . . | Belmont . . | – | – | Alarm given by the police under the belief that the fire was in Cambridge. |
| Tuesday . | 15 | 9.50 P. M. | 69 | New Eng. Brick Co. | New Eng. Brick Co. . | Dwight Street . | Trifling. | – | Hot ashes in boiler-room igniting woodwork. |
| Saturday . | Sept. 2 | 4.00 P. M. | 9 | Woodbury & Co. . | Woodbury & Co. . . | Otis Street . . | 50 | 50 | Burning of shavings adjoining boiler-room, and slight damage to roof. |
| Tuesday . | 5 | 3.30 P. M. | 69 | Sam'l F. Woodbridge | F. Schmidt . . . . | North Avenue . | 60 | 60 | Fire caused by an inmate, who carelessly placed a lighted pipe in a trunk of clothing. |
| Thursday . | 7 | 9.00 P. M. | 2 | Badger & Batchelder | Badger & Batchelder | Bridge Street . | Trifling. | – | Hot ashes setting wood-work on fire. |
| Tuesday . | 12 | 9.00 P. M. | 72 | . . . . . | . . . . . | Arlington . . | – | – | Burning of a barn. Alarm given by persons who supposed the fire to be on the Almshouse premises. |
| Wednesday | 20 | 6.25 P. M. | 36 | J. M. Robbins . . | Unoccupied . . . . | Bigelow Street | Trifling. | – | Slight fire on roof, caused by sparks from a tinman's furnace. |
| Thursday . | 28 | 4.40 P. M. | 41 | B. F. Gault . . . | Several families . . | Pleasant Street | Trifling. | – | Shavings set on fire by children, in basement. |
| Saturday . | 30 | 8.20 P. M. | 35 | Joseph Stevens . . | Joseph Stevens . . | Harvard Street | Trifling. | – | Partial burning of beds and bedding, caused by carelessness of a domestic. |
| Thursday . | Oct. 5 | 4.30 P. M. | 25 | Mrs. Calden . . . | Willard Metcalf . | Brookline St. . | 130 | 80 | Children playing with matches. |
| Friday . . | 6 | 9.15 A. M. | 42 | Babcock & Stimson | Babcock & Stimson . | Brighton . . | – | – | Boiling over of varnish and destruction of small frame building. Mr. Babcock was severely burned. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Friday . . | Oct. 6 | 11.20 A. M. | 2 | Fitchburg R. R. Co. | Fitchburg R. R. Co. . | Charlestown . | – | – | Alarm given in the city for aid, and No. 3 was dispatched thereto. |
| Monday . | 9 | 4.20 P. M. | 2 | . . . . . | . . . . . | Bridge Street . | – | – | Boiling over and ignition of a kettle of roofing tar in the street. |
| Friday . . | 20 | 10.30 A. M. | 14 | Michael Quinn . . | Jas. Adams and others | Cambridge St. . | $125 | $125 | Burning of clothing and damage to woodwork in room. Cause of fire unknown. |
| Monday . | 23 | 2.30 P. M. | 82 | . . . . . | . . . . . | Lake View Av. | – | – | Leaves set on fire in the woods, by boys. |
| Tuesday . | 24 | 6.40 P. M. | 82 | . . . . . | . . . . . | Lake View Av. | – | – | Leaves set on fire in the woods, by boys. |
| Sunday . | Nov. 12 | 7.40 A. M. | 78 | Bright & Co. . . | Bright & Co. . . . | Belmont . . | – | – | Ice-house on borders of Fresh Pond. Engines 1 and 4, and H. and L. of this city, present. |
| Monday . | 13 | 6.00 A. M. | 65 | Middlesex Bleachery | Middlesex Bleachery | Sacramento St. | 50 | – | Sparks on roof of building from chimney. |
| Monday . | 13 | 10.00 P. M. | 54 | Harvard College . | . . . . . | Cambridge St. | Trifling. | – | Pile of lumber maliciously set on fire. |
| Friday . . | 17 | 4.30 P. M. | 8 | Lincoln & Co. . . | Lincoln & Co. . . . | Third Street . | 20 | 20 | Kerosene in still catching fire from obstruction of pipe. |
| Friday . . | 17 | 10.55 P. M. | 59 | William Read . . | James O'Brien . . . | Mt. Auburn St. | 400 | 300 | Barn supposed to have been set on fire. |
| | | | | | | | $127,300 | $124,325 | |

# RESERVOIRS.

## LOCATED IN WARD ONE.

Brighton Street, corner Eliot.
Bow Street, centre of Square.
Cambridge Street, nearly opposite Sumner.
College Yard.
Garden Street, north end Appian Way.
Junction Garden Street and Concord Avenue, opposite Arsenal.
Kirkland Street, opposite Oxford.
Main Street, corner Dana.
Mount Auburn Street, foot of Linden.
Mt. Auburn St., opp. Orthodox Church.
Prescott Street, near J. D. Green's barn.
Square, front of house of late Dr. Holmes.

## LOCATED IN WARD TWO.

Austin Street, between Temple and Inman.
Broadway, head of Tremont.
Broadway, corner Winsor.
Clark Street, corner Hampshire.
Cambridge Street, corner Webster Avenue.
Essex Street, corner Austin.
Harvard Street, corner Davis.
Harvard Street, head of Cherry.
Harvard Street, opp. Burial-ground.
Harvard Street, corner Prospect.
Harvard Street, corner Columbia.
Main Street, junction Broadway.
Norfolk Street, midway between Broadway and Hampshire.
Prospect Street, 175 feet north of Broadway.
Washington Street, corner Cherry.

## LOCATED IN WARD THREE.

Cambridge Street, corner South Fifth.
Cambridge Street, 70 feet east of Third.
Front of Hotel, junction Bridge and Gore Streets.
Gore Street, corner North Third.
New England Glass Co.'s Yard.
Otis Street, corner Fourth.
South Sixth Street, corner Spring.
Thorndike Street, corner Third.
Under N. England Glass Co.'s Building.
Under Lowell R. R. Machine Shop.
Winchester's Factory Yard.

## LOCATED IN WARD FOUR.

Austin Street, corner Douglass.
Brookline Street, corner Auburn.
East end of School Street, near Brooks's Buildings.
Green Street, opp. Prospect House Stable.
Junction Western Avenue and Pleasant Street.
Main Street, corner Brookline.
Main Street, junction of Western Avenue and River Street.
Main Street, corner Austin.
Main Street, near Liberty Pole.
Main Street, east side of D. Osborn's Factory.
Main Street, 50 feet west of Car Factory.
Magazine Street, corner William.
Pearl Street, near Jones & Co.'s Factory.
Pearl Street, corner Franklin.
School Street, corner Cherry.
Washington Street, corner Harrison.
Washington Street, corner Pine.

## LOCATED IN WARD FIVE.

In Square, opposite Porter's Hotel.
N. Avenue, near Engine House No. 4.

# HYDRANTS.

A star (*) indicates 3-inch hydrants.

## LOCATED IN WARD ONE.

*Appleton Street, corner Highland.
Brattle Street, opp. the line between Messrs. Longfellow and Hastings.
Brattle Street, corner Ash.
Brattle Street, corner Hilliard.
Brattle Street, corner Brattle House estate.
*Brattle Street, corner Lowell.
Brattle Street, near R. R. Stables, in Watertown.
Brattle Street, corner Fresh Pond Lane.
Brattle Street, opp. Mt. Auburn Greenhouse.
Brattle Street, front of Mrs. Wyeth's estate.
Brattle Street, near Coolidge's Lane.
Brattle Street, corner Willard.
*Broadway, junction Cambridge Street.
*Broadway, corner Prescott Street.
*Broadway, corner Trowbridge Street.
*Broadway, corner Quincy Street.
*Broadway, corner Ware Street.
*Broadway, corner Ellery Street.
Banks Street, corner Flagg.
Banks Street, corner Cowperthwaite.
Between the rails of R. R. track, in front of Lyceum Hall.
*Baldwin Street, corner Baldwin Place.
*Buckingham Street, opp. Stevens's barn.
Cambridge Street, front Scientific Sch.
Cambridge Street, corner Sumner.
Cambridge Street, corner Baldwin,
Crane Street, corner De Wolf.
Concord Avenue, corner Sparks Street.
*Concord Avenue, opp. Cragie Street.
*Chauncy Street, 500 feet from North Avenue.
Church Street, corner Palmer.
Cragie Street, near corner Sparks.
Dunster Street, corner South.
Dunster Street, corner Mt. Auburn.
*Ellery St., east side, midway between Broadway and Cambridge Street.
*Everett Street, south side, midway between North Avenue and Oxford Street.
Fayerweather Street, corner Brattle.
Fayerweather Street, opp. Reservoir.
Foster Street, corner Irving.
Garden Street, corner Mason.
Garden Street, corner Wallace.
Harvard Street, corner Remington.
Harvard Street, opp. Harvard Block.
Junction of Main and Harvard Streets.
Junction of Waterhouse Street and Concord Avenue.
*Kirkland Street, near Baldwin, south side.
*Kirkland Street, corner Preston, south side.
*Kirkland Street, corner Irving, south side.
*Kirkland Street, corner Sumner, south side.
*Kirkland Street, corner Quincy, south side.
*Kirkland Street, opp. Memorial Hall.
Lake View Avenue, 500 feet from Brattle Street.
Mt. Auburn Street, corner Brighton.
Mt. Auburn Street, corner Howard.
Mt. Auburn Street, opp. McClellan.
*Mt. Auburn and Bow Streets.
*Mt. Auburn Street, opp. De Wolf.
*Mt. Auburn Street, 200 feet west Cemetery gate, inside inclosure.
Mt. Auburn Street, corner Willard.
Mt. Auburn Street, corner Sparks.
*Mellen Street, corner Oxford.
North Avenue, corner Chauncy Street.
North Avenue, corner Shepard Street.
*North Avenue, corner Holmes Place.
*North Avenue, corner Jarvis Street.
Oxford Street.
*Oxford Street, corner Everett.
*Putnam Street, corner Western Avenue, north side.
Prescott Street, corner Harvard.
Phillips Place, corner Berkeley Street.
Sparks Street, corner Foster.
Sparks Street, opp. McDonald's Marble Works.
Sparks Street, opp. Chas. T. Russell's.

## LOCATED IN WARD TWO.

Amory Street, corner Summer.
*Antrim Street, near Broadway.
*Broadway, corner Highland Avenue.
*Broadway, junction Main Street.
*Broadway, corner Hancock Street.
*Broadway, corner Antrim Street.
*Broadway, corner Tremont Street.
*Broadway, corner Elm Street.
*Broadway, corner Dock Street.
*Broadway, corner Court Street.
*Broadway, corner Dana Street.
*Broadway, corner Ellsworth Avenue.
*Broadway, corner Fayette Street.
*Broadway, corner Amory Street.
*Broadway, corner Norfolk Street.
*Broadway, corner Boardman Street.
*Broadway, junction Hampshire Street.
Broadway, opp. Tucker's Factory.
Broadway, corner Davis Street.
*Bigelow Street, midway between Main and Harvard.
Columbia Street, corner Washington.
*Columbia Street, corner Lincoln.
*Columbia Street, corner Market.
*Columbia Street, corner Hampshire.
*Centre Street, opp. Dana School-house.
*Cambridge Street, corner Rideout.
Cambridge Street, corner Norfolk.
Cambridge Street, corner Willow Place.
*Cambridge Street, corner Prospect.
*Cambridge Street, corner Tremont.
*Cambridge Street, opposite Fayette.
Cambridge Street, north side, near junc. of Hampshire and Cambridge.
Cambridge Street, opp. head of Maple Avenue.
Essex Street, westerly side, midway between Harvard and Austin.
*Elm Street, corner Market.
*Fayette Street, 500 feet from Broadway.
Harvard Street, corner Pine.
Harvard Street, corner Hancock.
Harvard Street, corner Dana.
Harvard Street, corner Clark.
*Harvard Street, corner Moore.
*Harvard Street, corner Norfolk.
*Hunting Street, 400 ft. from Cambridge
Houghton Street, corner Bolton, in Somerville.
*Inman Street, near Austin.
*Inman Street.
*Inman Street, corner Harvard.
*Inman Street, corner Broadway.
Jefferson Street, corner Rideout.
Main Street, corner Lee.
Main Street, corner Hancock.
Main Street, corner Dock.
Main Street, corner Essex.
Main Street, opposite Pleasant.
*Main Street, corner Bigelow.
*Main Street, Lower Port.
Moore Street, head of Hastings.
Market Street, corner Union.
Maple Ave., midway between Broadway and Cambridge Street.
Norfolk Street, corner Hampshire.
Norfolk Street, corner Worcester.
Norfolk Street, head of Washington.
Oak Street, west side, near Somerville Line.
Prospect Street, opposite B. Tilton's.
Prospect Street, corner Broadway.
Prospect Street, corner Hampshire.
*Prospect Street, corner Main.
*Prospect Street, corner Gardner.
*South Street, opp. Willow, Somerville.
Tremont Street, near Wellington's house.
*Tremont Street, near Cambridge.
*Union Street, corner Hampshire.
Washington Street, corner Clark.
*Ward Street, corner Horace, Somerville.
*West Boston Bridge.
*West Boston Bridge.
Winsor Street, corner Lincoln.
Winsor Street, corner Hampshire.
*Winsor Street, corner Washington.

## LOCATED IN WARD THREE.

*Bridge Street, corner Prison Point.
*Bridge Street, corner Short.
Bridge Street, corner Water.
Bridge Street, opp. Wellington's Counting Room.
Bridge Street, opp. Bay State Glass-house.
Bridge Street, north side, opp. Braman & Shaw's.
*Charles Street, corner Fourth.
*Cambridge Street, opposite First.
*Cambridge Street, corner Lambert.
*Cambridge Street, corner Franklin Alley.
Cambridge Street, corner Third.
Cambridge Street, junction Bridge St.
Cambridge Street, corner Sixth.
*Court Street, opposite Kerosene Works.
*Court Street, corner Munroe.
Fourth Street, corner Winter.
Fourth Street, corner Bridge.
*Fifth Street, corner Charles.
*Fifth Street, corner Spring.
Fifth Street, corner Gore.

Gore Street, corner Lambert.
Gore Street, corner Fourth.
*Jefferson Street, corner Warren.
*North Street, corner East.
*North Street, near Glass Co.'s cutting-shop.
*Otis Street, corner First.
*Otis Street, corner Third.
Otis Street, corner Seventh.
*Prison Point Street, 50 feet north of Ice Sheds.
*Prison Point Street, on R. R. track, 300 feet from street.
*Prison Point Street, on R. R. track, 600 feet from street.
*Prison Point Street, 400 ft. from Bridge Street.
*Second Street, corner Thorndike.
Second Street, corner Otis.
*Sixth Street, corner Gore.
Spring Street, corner Fourth.
Spring Street, corner Second.
*Third Street, corner Winter.
Third Street, corner Vine.
Thorndike Street, corner Sixth.
Thorndike Street, corner Fifth.
Vine Street, corner Fifth.
*Vine Street, corner Sixth.

## LOCATED IN WARD FOUR.

*Brookline Street, corner Allston.
*Brookline Street, corner Hamilton.
*Brookline Street, corner Valentine.
*Brookline Street, corner Walnut.
*Brookline Street, corner Eric.
Brookline Street, corner Franklin.
Brookline Street, corner Chestnut.
Blackstone St., west side, 100 ft. from Avenue.
*Franklin Street, corner Soden.
*Franklin Street, corner Hancock.
*Franklin Street, corner Bay.
*Franklin Street, near the hill.
Front, junction State Street.
Foot of School Street.
*Green Street, corner Bay.
*Kinnaird Street, corner Bay.
*Kinnaird Street, corner Putnam.
*Magazine Street, corner Cottage.
*Magazine Street, corner Walnut.
*Magazine Street, corner Warland.
*Magazine Street, corner Auburn.
*Magazine Street, corner Park.
*Magazine Street, corner Webster.
Magazine Street, near Short.
Magazine Street, corner Willow.
Main Street, corner Columbia.
Main Street, corner Winsor.
Main Street, opposite Brooks's Buildings.
Main Street, corner Norfolk.
Main Street, north side, opp. Kennedy's Bakery.
Main, junction Austin Street.
*Pleasant Street, corner Webster.
*Pleasant Street, corner Green (plug).
*Pleasant Street, corner Franklin.
*Pleasant Street, corner Walnut.
*Pleasant Street, corner Somerset.
*Pleasant Street, corner Park.
Pleasant Street, corner Prince.
*Pleasant Street, corner Webster Place (Plug).
*Pearl Street, corner Lake.
*Pearl Street, corner Walnut.
Pearl Street, corner Perry.
Pearl Street, corner Cottage.
Pearl Street, corner Auburn.
Putnam Street, corner Putnam Place.
River Street, corner Franklin.
River Street, opposite Cottage.
River Street, opposite Harrison Avenue.
*Sidney Street, corner Allston.
*Sidney Street, corner Walnut.
*Sidney Street, corner Chestnut.
*Waverly Street, opposite Willard's.
*Western Ave., corner Howard Street.
Washington Street, near east end.
Western Avenue, corner Jay Street.

## LOCATED IN WARD FIVE.

Arlington Street, 500 ft. from N. Ave.
Beech Street, east side, 20 feet from Orchard Street.
Between rails of R. R. opp. office door.
Concord Avenue, corner Madison St.
Concord Avenue, opp. Bond Street.
*Cedar Street, corner Spruce.
*Cedar Street, opposite Norris.
Cedar Street, corner lane to Factory.
*Garden Court, corner Dublin Street.
*Garden Street, opposite Bond.
*Harvey Street, opp. Montgomery.
*Linnæan Street, corner Avon.
*Linnæan Street, corner Bowdoin.
*Linnæan Street, corner Raymond.
*Milk Street, corner Cottage.
*North Avenue, near R. R. bridge.
*North Avenue, corner Coggswell Ave.
*North Avenue, corner Allen Street.
*North Avenue, corner Dover Street.
*North Avenue, 300 ft. west of Tannery.
North Avenue, corner Sacramento Street.
North Avenue, opp. Linnæan Street.

North Avenue, corner Chester Street.
*North Avenue, corner Arlington Street.
North Avenue, corner Rice St.
North Avenue, corner Cedar Street.
North Avenue, opp. Tannery.
North Avenue, near Walcott Richardson's gate.
*Oxford Street, corner Forest.
Oxford Street, opposite Eustis.
*Orchard Street, opposite Tenney Court.
*Reed Street, 250 ft. from Harvey.
*Rice Street, opposite L. L. Cushing's.
Roseland Street, corner Frost.
*Spruce Street, corner Hollis.
*Spruce Street, corner Sargent.
*Spruce Street, corner Montgomery.
*Spruce Street, corner North Avenue.
*Spruce Street, opposite School-house.
*Shepard Street, corner Avon.
*Two on Raymond Street, south side, near Mr. Dresser's estate.
Tuttle Street, opposite Ladd's barn.
*Washington Avenue, opp. Paper St.
Wyeth Street, corner Garden.

## Relief Engineer.

THOMAS WISEMAN, JR.

## Telegraph Operator.

THOMAS J. LEIGHTON.

## Fire Police.

| | |
|---|---|
| JAMES T. HALL | Ward One. |
| GEORGE S. PIKE | " Two. |
| GEORGE H. HOWARD | " Three. |
| MOSES RICKER | " Four. |
| WILLIAM T. BRYANT | " Five. |

## Location of Signal Boxes.

No. 2. Bridge Street, corner of Prison Point.
6. Court Street, corner of Broadway.
8. Third Street, corner of Thorndike.
9. Cambridge Street, Beal & Hooper's Building.
12. Winter Street, corner of Third.
13. Fourth Street, No. 3 Engine House.
14. Sixth Street, corner of Cambridge.
24. Brookline Street, corner of Valentine.
25. Main and Front Streets (junction).
26. Main Street, corner of Osborn.
27. Clark Street, corner of Harvard.
28. Broadway, opposite Page's Box Factory.
32. Cambridge Street, corner of Webster Avenue.
34. Columbia Street, corner of Hampshire.
35. Harvard Street, corner of Norfolk.
36. Main Street, corner of Western Avenue.
37. Pleasant Street, corner of River (junction).
38. Magazine Street, corner of Lake.

41. Pleasant Street, corner of Short.
42. Blackstone Street, opposite Riverside Press.
46. Main Street, corner of Hancock.
47. Broadway, corner of Antrim.
48. Cambridge Street, corner of Hampshire (junction).
51. Broadway, corner of Ellery.
52. Mt. Auburn & Main Streets (junction).
53. Mt. Auburn Street, corner of Linden.
54. Cambridge Street, corner of Sumner.
59. Harvard Square, Ramsay's Apothecary.
62. Mt. Auburn Street, corner of Hilliard.
63. Brattle Street, corner of Mason (junction).
64. Garden Street, corner of Chauncy.
65. North Avenue, corner of Shepard.
68. North Avenue, near Railroad Bridge.
69. North Avenue, No. 4 Engine House.
71. North Avenue, near Tannery.
72. Cedar Street Hotel Building.
78. Concord Avenue, corner of Wyeth Street.
79. Brattle Street, corner of Sparks.
82. Brattle Street, corner of Elmwood Avenue.

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## Location of Bell Strikers.

| | |
|---|---|
| Unitarian Church, Harvard Square . . . . . | Ward One. |
| Methodist Church, Harvard Street . . . . . | " Two. |
| Unitarian Church, Third Street . . . . . | " Three. |
| Baptist Church, North Avenue . . . . . | " Five. |

# REPORT

OF

## GEORGE L. CADE,

SUPERINTENDENT OF STREETS.

---

CITY OF CAMBRIDGE, *December* 13, 1871.

*To the Honorable City Council:—*

THE undersigned asks leave to submit for your consideration his Eighth Annual

## REPORT.

### Streets and Paving.

| | |
|---|---|
| The Appropriation for Streets and Paving for the financial year ending November 30, 1871, was . | $250,000.00 |
| Amount transferred to Bridges . . . . . | 6,000.00 |
| | $244,000.00 |
| Additional Appropriation . . . . . | 664.46 |
| Total Appropriation and amount expended . . . | $244,664.46 |
| Amount received and paid to Treasurer . . . . | $4,074.33 |

The Appropriation for this Department has been expended as follows:—

| | |
|---|---|
| For labor . . . . . | $42,797.64 |
| " " with teams . . . . . | 16,788.69 |
| " bricks and paving . . . . . | 59,982.71 |
| " horse shoeing . . . . . | 611.85 |
| " old stone for crushing . . . . . | 2,284.94 |
| " hay and grain . . . . . | 3,022.36 |
| " lumber . . . . . | 530.14 |
| Amount carried forward . . . . | $126,018.33 |

| | | | | |
|---|---|---|---|---|
| | | | Amount brought forward . . . . | $126,018.33 |
| For | land | damages, | Bridge Street . . . . . | 292.30 |
| " | " | " | Cambridge Street . . . . . | 922.50 |
| " | " | " | Allston Street . . . . . | 2,509.45 |
| " | " | " | Essex Street . . . . . | 180.75 |
| " | " | " | Cedar Street . . . . . | 280.25 |
| " | " | " | Concord Avenue . . . . . | 528.40 |
| " | " | " | Broadway . . . . . | 5,383.11 |
| " | " | " | Mason Street . . . . . | 4,315.20 |
| " | " | " | Spruce Street . . . . . | 3,919.81 |
| " | " | " | North Avenue . . . . . | 2,509.83 |
| " | " | " | Brattle Street . . . . . | 55,709.05 |
| " | gravel, including Gravel Bank on Pearl Street | | | 34,717.63 |
| " | horses, harnesses, and repairs . . . . . | | | 2,609.93 |
| " | shovels, picks, and bars . . . . . | | | 397.71 |
| " | incidentals, including Superintendent's salary, grade damages, street signs, etc., etc. . . . | | | 4,370.21 |
| | | | | $244,664.46 |

There have been sixteen orders passed during the present year for the laying of sidewalks. Three of these, for sidewalks on Mount Auburn Street, have not been completed for various reasons. One was ordered on the southerly side of Mount Auburn Street from Putnam to Brighton Street and was commenced, but could not be completed on account of the scarcity, and high price of brick, as I did not consider it expedient to pay more than fifteen dollars per thousand. The two remaining orders for this street could not be completed on account of the probable changes to be made in the lines of the same; and I believe the Eliot Street corner has not yet been defined, as it is intended to be. Orders for three other sidewalks remain uncompleted; the one on North Avenue, above the Fitchburg Railroad Bridge, for the reason that a proposition is now pending for the change of line on said street. The Brattle Street order for a similar cause, as an order has been pending for some time to change the line of this street by the widening of James Street. And the order for a brick sidewalk on Broadway and Inman Streets could not be completed, owing to the lateness of the season, and the scarcity of brick. Sidewalks have been completed upon the following streets: —

On Columbia Street, from Main to Cambridge Street, upon the westerly side; and from Main to Washington Street, upon the easterly side.

On Harvard Street, upon the northerly side, its entire length.

On the corners of East and North Streets, edgestone only.

On Inman Street, both sides, edgestone only.

On Tremont Street, both sides, from Broadway to Hampshire Street.

On Centre Street, both sides, edgestone only.

On Austin Street, north side, its entire length.

On Third Street, between Thorndike and Spring Streets.

On Pleasant Street, west side of City Hall.

On Concord Avenue, Chauncy, Garden, and Mason Streets, edgestone only.

On Mt. Auburn Street, partially completed.

On Brattle Street, from Brighton Street to Elmwood Avenue, on both sides of the street, with edgestone.

The widening of Brattle Street, including land damages, edgestone, paving, and grading, has been nearly completed, at a cost of . . . . . $74,142.24

The following streets have been widened and graded: —

| | |
|---|---|
| Spruce and Cedar Streets cost about . . . . . | 10,000.00 |
| North Avenue cost about . . . . . | 5,000.00 |
| Concord Avenue cost about . . . . . | 1,200.00 |
| Mason Street cost about . . . . . | 5,000.00 |
| Allston Street cost about . . . . . | 3,500.00 |
| Brattle Square cost about . . . . . | 5,000.00 |
| Broadway, corner of Winsor Street . . . . . | 5,500.00 |
| Elmwood Avenue . . . . . | 600.00 |
| | $109,942.24 |

During the past year there have been 55,660 yards of paving laid, and 46,100 feet of edgestone set. There will be due the City for assessments for sidewalks completed the present year, $42,818.70.

We have on hand at the City Wharf on Main Street, at the Lower Port, about $5,000 worth of stock, consisting of paving stone, edgestone, block stone, and corners, to commence work

with in the spring. I would again urge the necessity of paving the remaining section of Bridge Street westerly to the Somerville line. It is next to an impossibility to keep this street in good order, unless it is paved. In my opinion it would be a great saving of money if a portion of Cambridge and Main Streets were paved each year instead of macadamizing or graveling them as now. The past season has been an exceedingly bad one for the streets, having been so very dry that the stock upon the several main avenues has been ground up and blown off, leaving them in a very rough condition, which could not be helped, unless said avenues were kept watered. I question if it would not be cheaper for the City to do this watering at its own expense, rather than to have the surface of the streets blown away.

In my opinion, that section of Ward Four lying south of Main Street, needs especial attention in regard to sidewalks, having but one good walk in the entire Ward, — that running southerly from Main Street. River Street, at least, (if no other) should be curbed and bricked upon one side thereof. Upon the westerly side, for almost its entire length, there are very serious encroachments, which, if allowed to stand much longer, I think the City will have to pay for. The principal streets of the City are, I believe, in a very good condition, with the exception of Cambridge Street from the Grand Junction Railroad westerly, which will require extensive repairs and grading in the spring.

I would beg leave to suggest to your Honorable body the propriety of making a special appropriation for the widening of Streets, instead of charging the same to the Street Appropriation, as it does not show a fair exhibit of the street expenses as now charged.

During the past year $76,550.65 have been expended for the purchase of land, and in damages for widening streets.

The regular force employed by the City in the Street Department at the present time is thirty-five men and eighteen horses. All the men, with but one exception, are employed by the month.

As to the amount needed for Street Appropriation for the coming year, it is almost impossible to make even an approximate estimate. The expenses for November and December, which have to be paid from the appropriation for 1872, including land

damages due upon the several streets that have been widened, will amount to not less than $45,000. In my opinion, the Appropriation should be made for not less than $200,000. And if any extensive street improvement is made, this amount will not be sufficient.

### Bridges.

| | |
|---|---|
| The Appropriation for Bridges for the financial year ending November 30, 1871, was | $14,597.26 |
| Amount expended | 14,597.26 |

The several bridges of the city are in a very fair condition, with the exception of the River Street and Court Street Bridges, so called, which, in my opinion, will need considerable repairs. I should judge that an appropriation of $10,000 would be required for this Department.

### Schedule of Personal Property belonging to the Street Department.

| | |
|---|---|
| Sixteen Horses | $6,800.00 |
| Fifteen Cart Harnesses | 450.00 |
| Ten Carts | 750.00 |
| One Wagon and Harness | 350.00 |
| One Light Wagon and Harness | 175.00 |
| One Set of Runners | 75.00 |
| One Plough | 5.00 |
| Utensils for work on streets, etc. | 200.00 |
| Stable Furniture | 50.00 |
| Stone Crusher and Steam-engine | 2,500.00 |
| Nine Snow Ploughs | 180.00 |
| Three Stone Rollers | 900.00 |
| | $12,435.00 |

Respectfully submitted,

GEORGE L. CADE,

*Superintendent of Streets.*

# REPORT

OF

# THE CHIEF OF POLICE.

---

OFFICE OF THE CHIEF OF POLICE,
CAMBRIDGE, *December*, 1871.

*To the Honorable City Council of Cambridge : —*

GENTLEMEN,— I have the honor to submit the following Report of the doings of the Police Department during the year ending November 30, 1871.

## EXHIBIT:

SHOWING NUMBER OF ARRESTS AND CHARACTER OF OFFENSES FOR THE YEAR.

| | | |
|---|---|---|
| Whole number | | 1,835 |
| Males | 1,626 | |
| Females | 209 | |
| Residents | 1,558 | |
| Non-residents | 277 | |
| Adults | 1,537 | |
| Minors | 298 | |

### Offenses.

| | |
|---|---|
| Adultery | 3 |
| Armed with dangerous weapon | 1 |
| Assault and battery | 213 |
| Assault on officers | 15 |
| Attempt at rape | 1 |
| Attempted larceny | 2 |
| Bastardy | 4 |
| Breaking and entering | 10 |
| Cruelty to animals | 10 |

| | |
|---|---|
| Common drunkards | 28 |
| Drunkenness | 937 |
| Disturbing prisoner | 1 |
| Disturbing peace | 102 |
| Disorderly house | 1 |
| Deserter from U. S. Army | 1 |
| Escaped prisoner | 1 |
| Escaped from Reform School | 1 |
| Escaped from Almshouse | 1 |
| Evading fare on horse-cars | 2 |
| Exposing person | 2 |
| Felonious assault | 4 |
| Firing fire-crackers | 1 |
| Forgery | 6 |
| For Judge of Probate | 1 |
| Fornication | 2 |
| Habitual absentees from school | 21 |
| Idle and disorderly | 2 |
| Insanity | 22 |
| Keeping unlicensed dog | 9 |
| Lewdness | 1 |
| Larceny | 95 |
| Malicious mischief | 32 |
| Misdemeanor | 3 |
| Murder | 3 |
| Noisy and disorderly | 1 |
| Non-appearance as witness | 1 |
| Peddling without license | 1 |
| Railer and brawler | 1 |
| Refusing assistance to officer | 1 |
| Refusing to pay car-fare | 1 |
| Sale of liquor | 3 |
| Safe-keeping of prisoner | 1 |
| Surety of peace | 32 |
| Suspicious persons | 4 |
| Stubborn children | 4 |
| Truancy | 5 |
| Vagrancy | 23 |
| Violation City Ordinances | 86 |

| | |
|---|---|
| Violation Lord's day | 128 |
| Violation Board of Health | 1 |
| Willful trespass | 4 |

There have also been received during this period 1,296 lodgers, of whom 1,189 were males, and 107 were females.

Total Cost of the Department for the Year.

| | | |
|---|---|---|
| Appropriation | | $60,000.00 |
| Receipts: being witness fees to officers and services on warrants, paid into Treasury, — which amount is to be regarded as credit | | 3,780.30 |
| Expenditures: | | |
| Pay of Chief | $1,875.00 | |
| " " clerical aid | 80.91 | |
| " " regular officers | 52,539.00 | |
| " " special officers, employed by reason of sickness, vacations, bridge repairing, etc. | 1,780.50 | |
| " " incidentals: including coal, gas, supplies, repairs, horse-keeping, new wagon, padded cell, etc. | 1,713.32 | |
| Total | | 57,988.73 |
| Balance, showing actual cost | | $54,208.43 |

| | | |
|---|---|---|
| The horse and wagon used for the conveyance of prisoners to and from the court house has earned during the year | | $1,404.00 |
| The charges for maintaining the same have been as follows: — | | |
| Horse-keeping | $312.00 | |
| Horse-shoeing | 22.91 | |
| Supplying place of horse during lameness | 10.50 | |
| Hire of sleigh and carryall | 6.00 | |
| Robe | 18.00 | |
| Repairing harness | 1.10 | |
| Total | | 370.51 |
| Leaving a balance as income to the city of | | $1,033.49 |

This sum is included in the fees on warrants, and forms part of the $3,780 paid in.

It having been concluded that the present vehicle was insufficient for and not altogether adapted to the growing demands of the service, a new one has been procured, which it is believed will answer all requirements in the future. In its construction, not merely present but expected wants have been consulted; and thus, owing to its size, another horse in span to drag it will be required, entailing the additional cost of his keeping, which will act simply as a diminution of receipts derivable from this source. However, the other and numerous advantages attendant on having two horses, with an extra wagon for the moving of paupers, insane, hospital and small-pox patients, will more than compensate this enhanced charge.

Authority for the above purchase was conferred by the City Council; and under the same authority there have been provided hand-stretchers, one for each station, to be used in the moving of injured persons on occasions of accident; and at Station Three a cell has been padded for the safer keeping of the insane while on our hands awaiting removal to an asylum.

The new lock-up just erected on Norfolk near Cambridge Street supplies a much needed want. Heretofore the officer doing duty in that neighborhood has had to convey his prisoner all the way to the City Hall or to East Cambridge, involving a much longer absence from his beat than was prudent. To obviate such necessity was the purpose of this building; which results at once in relieving the officer from an arduous service, and in extending to the citizen a larger and more uninterrupted protection.

There are still other pressing needs; the more material of which are: —

1. Better accommodations for the Police Court.

2. More suitable quarters for the police in the Second District, the station now located in the cellar of the City Hall being damp, and apparently unhealthy. And,

3. The introduction of a Dial-telegraph connecting the several police stations with the City Hall, which might be further extended to the engine-house at Fresh Pond, thereby furnishing ready means of communication, not only to the Police, but also to the Water Board and Fire Department.

The first two are of seeming urgency; the latter, an auxiliary promising great usefulness.

At present the Department is composed of fifty officers: —

A Chief, 4 Captains, 14 Day Officers, 23 Night Officers, 3 Night-station Officers, 5 Truant Officers.

The night officers are on duty from 9 P. M. till 4 A. M. The day officers are on, one half from 4 A. M. till 12½ noon, the other half from 12½ till 9 P. M. So that, as will be seen, between the hours of 6 and 9 in the evening and 4 and 7 in the morning there are but seven officers on duty throughout the city, when, properly, there should be three times that number, or as many as during the middle hours of the night. The one remedy which suggests itself is in the employment of more men, and, what will then become possible, the adoption of two night reliefs of equal complement, — one of which shall go on at 6 P. M., and remain till 1 A. M., the other to relieve and continue till 8 A. M., in turn to be followed by a single and smaller relief performing duty for the day.

An arrangement of this kind would necessitate an increase of sixteen to the force as at present constituted; but by dispensing with the night-station officers, and devolving that duty successively on the off detail, with, further, a discontinuance of school service by police officers, — a service become so enlarged as to call the truant officer almost entirely away from his other and, as it would seem, more legitimate duties, — it would follow, through this gain of eight available officers, that but eight additional ones would have to be provided with whom to realize the desired change.

Thus reorganized, the Department would consist of, —

A Chief, 4 Captains, 7 Day Officers, 46 Night Officers, in all fifty-eight.

Whilst this would unquestionably be the most effective system that could be adopted, in that it would satisfy every requirement, yet, as it may be deemed inexpedient at this time to consider so definite a change, one other method suggests itself of partial application so far as regulating the deficiency during the evening hours, being that of engaging a limited number of "specials" to serve from 6 to 9 P. M. in connection with the afternoon relief. Eight or ten reliable men secured for this purpose and distributed

about the city upon the principal avenues, leaving the regulars to attend more particularly to the business localities, would largely better the existing condition. The payment of a dollar apiece an evening would doubtless be regarded as a fair and sufficient compensation, and in the aggregate for the year would form but a moderate expenditure.

In presenting these views, I am not unmindful that the force has been quite largely increased during the past few years, and that the expense of maintenance has been proportionally augmented. This has been done in answer to growing demands consequent on the rapid extension of inhabitable areas; and with a continued increase of population, and limits further extended, more police officers will in time necessarily have to be supplied. But for all this expenditure there is believed to be enjoyed a full equivalent in the restraining influence and guaranteed security which so fully attaches to the presence of a strong and earnest patrol; and is so surely lost and overcome in maraudings when by weakness we invite attack.

The duties of the police officer are enlarged; not merely requiring him to preserve order and arrest offenders, but at all times to be thoroughly observant, that nothing entailing possible injury to the citizen escape his notice. Obstructions in streets or on sidewalks, breakages of water-pipes, and obstructed hydrants, he is speedily to report; whilst frequently it happens that a call is made to extinguish fire without the giving of general alarm. All these services, it affords me pleasure to state, have been performed in a degree highly acceptable; and the officers generally are deserving of full commendation for the very cheerful and conscientious manner in which they have severally discharged their respective and responsible trusts.

There has been one death in the Department the past year, — that of Mr. Samuel M. Frye, an efficient and valued officer, possessed of estimable qualities as a man, and having the respect and high regards of his associates.

No other changes have occurred; and, with the exception of an increase of nine new members, the same individuals compose the force as a year ago.

Respectfully submitted,

ISAAC BRADFORD,

*Chief of Police.*

# REPORT

OF

## ROLAND LITCHFIELD,

SUPERINTENDENT OF LAMPS.

---

*To the Honorable City Council of Cambridge:* —

GENTLEMEN, — I herewith submit my Annual Report in relation to the Lamp Department.

The number of street lamps is as follows: —

District One, 240 gas, 4 fluid.
District Two, 235 gas, 17 fluid.
District Three, 81 gas, 22 fluid.

556 gas, 43 fluid. Total . . 599

Twenty of the above were added during the year.

Thirty-nine lamps on West Boston Bridge, and fourteen lamps on Canal Bridge were deducted from our street lamps, as those two bridges are now in charge of Commissioners.

The following is an exhibit of the street lamps for the year: —

| | |
|---|---|
| For gas and U. S. tax . . . . . | $9,436.32 |
| Care of lamps and lighting . . . . . | 3,136.93 |
| Post, lanterns, and repairs . . . . . | 2,812.68 |
| Fluid, setting glass, matches, etc. . . . . | 709.36 |
| Superintendent of lamps . . . . . | 700.00 |
| Street signs . . . . . | 248.00 |
| | $17,043.29 |

The average cost of each lamp burning gas through the year was seven cents per night, and the average cost of each lamp

burning fluid for the same time was two cents and one mill per night.

Five men are employed to light the lamps and keep the lanterns clean, and they are paid forty-two cents per month for each lamp.

Respectfully submitted.

ROLAND LITCHFIELD,

*Superintendent of Lamps.*

CAMBRIDGE, *December* 1*st*, 1871.

# REPORT

OF

## JOSIAH G. CHASE,

CITY ENGINEER.

---

OFFICE OF CITY ENGINEER, CITY HALL,
CAMBRIDGE, *December* 20, 1871.

*To the Honorable City Council* : —

IN compliance with the eighth section of the ordinance relating to the City Engineer's department, I have the honor to present the following report : —

### Sewers.

The following sewers have been built, in obedience to orders therefor passed by the City Council, during the year ending November 30th, 1871.

Auburn Street, from Magazine Street sewer to near River Street, 12-inch round cement pipe. Length 222 feet. Cost $277.50.

Banks Street, from manhole at Copperthwaite Street to Crane Street 251 feet, 20″ × 18″; thence to Mount Auburn Street 430 feet, 18″ × 16″. South of manhole at Copperthwaite Street, 557 feet, 21½″ × 20″, and 17½″ × 15″, all egg-shaped, of common brick covered with stone. Length 1,238 feet. Cost $2,252.40.

Beech Street, from North Avenue sewer through the centre of Beech Street to within 45 feet of the southwesterly side of Elm Street in Somerville; a single ring of common bricks, 26″ × 24″ inside. Length 603 feet. Cost $1,747.50.

Charles and Sixth Streets, from centre of Fifth Street, west 185 feet, egg-shaped, 21″ × 19″, common brick covered with stone; thence to manhole at junction with Sixth Street, scow

bottom with brick walls covered with stone 20″ × 20″ in clear; from manhole north through Sixth Street to near Spring, 361 feet, wooden scow with brick walls covered with stone 16″ × 16″ in clear; and thence 42 feet of 12″ round cement pipe. Total length 856.1 feet. Cost $1,509.35.

Chester Street, from North Avenue sewer northeasterly to within 22 feet of Somerville line; of a single ring of common brick, 24″ × 20″ inside diameter. Length 308 feet. Cost $736.00.

Columbia Street, from east line of Webster Avenue in Cambridge Street, to and in Columbia Street to Lincoln Street; egg-shaped, 19″ × 17″, common brick covered, with stone. Length 631 feet. Cost $832.50.

Concord Avenue, extension from Garden Street sewer to near Craigie Street; 12″ round cement pipe. Length 540 feet. Cost $681.00.

Copperthwaite Street, from Charles River, or creek near the foot of De Wolf Street, to Banks Street. End of outlet to manhole, which contains tide gate, 118 feet in length, wooden box 30″ × 30″ inside. Remainder of wood covered with stone, and brick covered with stone, 30″ × 20″ and 30″ × 26″ inside dimensions. Length 748 feet. Cost $2,020.00.

Crane Street, from Banks Street, west 24 feet, 17½″ × 15″ common brick covered with stone; thence 15″ diameter round cement pipe 196 feet; thence 251 feet, 12″ round cement pipe. Length 471 feet. Cost $683.75.

Flagg Street, from Banks Street sewer west; round cement pipe 12″ diameter. Length 241¾ feet. Cost $312.58.

Foster Street, from Sparks Street, east; 12″ round cement pipe. Length 202 feet. Cost $336.90.

Hilliard Street, from Mount Auburn Street sewer to within 98 feet of Brattle Street; 15″ oval cement pipe. Length 501 feet. Cost $819.02.

Inman Street, from the sewer in Main Street, northerly to within 18 feet of the southerly line of Austin Street; 12″ round cement pipe. Length 324 feet. Cost $486.00.

Irving Street, from manhole in Kirkland Street, to centre of Irving Street; egg-shaped, 19″ × 21″, common brick covered with stone. Length 46 feet. Cost $75.90.

Kinnaird Street, from Western Avenue to near River Street; 12″ round cement pipe. Length 282 feet. Cost $352.50.

Lake Street, from Pearl Street sewer west; 12″ round cement pipe. Length 171 feet. Cost $213.75.

Mount Auburn Street, extension westerly from near Eliot Street to a point opposite the west line of Howard Street; 545½ feet egg-shaped, 23″ × 21,″ common brick covered with stone; 184 feet, 15″ oval cement pipe; 72 feet 12″ round cement pipe. Length 801½ feet. Cost $1,708.70.

Murray Street, extending from Eliot Street, southerly to Charles River. Near its outlet is a manhole which contains a side gate, from which to the river, 34 feet in length, the drain is a wooden box, 40″ × 38″ inside; the remainder 30″ × 26″ inside of wood. Total cost of drain $4,399.00, one half of which amount has been paid the contractor by the owners of abutting lands. Length 1,013 feet. Cost $2,199.50.

Otis Street, extended from Eighth Street to Ninth Street; a wooden scow with brick walls covered with stone; inside dimensions 24″ × 24″. Length 197 feet. Cost $394.00.

Prospect Street, connection between sewer in Broadway and sewer in Prospect Street, north of Broadway. Manhole in Broadway, 15″ round cement pipe. Length 180 feet. Cost $391.60.

Shepard Street, connection between Avon Street sewer east to old sewer in Shepard Street; 15″ round cement pipe. Length 366 feet. Cost $600.12.

Story Street, from Mount Auburn Street to north side of Brattle Street; 420 feet of 15″ oval cement pipe; 127 feet of 12″ round cement pipe. Length 547 feet. Cost $911.55.

Thorndike Street, extended from Eighth to Ninth Street; a wooden scow with brick walls covered with stone; inside dimensions 24″ × 24″. Length 187 feet. Cost $374.00.

Thorndike Street, extended from the east side of Second Street, easterly; a wooden drain 20″ × 20″ inside dimensions. Length 261 feet. Cost $522.00.

Western Avenue; extension of sewer in Western Avenue to Charles River, 24″ × 20″ wood. Length 100 feet.

In connection with the above sewers, and by authority derived from sundry orders passed by the City Council, there have been

built five manholes, two tide gates, and seventy-three catch basins. Covering stone has been furnished for the building of sewers in Trowbridge, Irving, and Felton Streets, between Cambridge and Broadway, 1,325 feet in length, at a cost of $331.25, and in Vine Street, 260 feet in length, at a cost of $65.00.

Total length of sewers built from November 30th, 1870, to November 30th, 1871, is $2\frac{39}{100}$ miles = 12,622.35 feet. Expended for same, including care and repairs, cleaning catch basins, etc., $35,286.24. Appropriation for the year $40,000.00. Unexpended November 30th, $4,713.76. Total length of sewers and drains in the City, a small portion of which has been built by private parties, the City furnishing covering stone, 192,566 feet or $36\frac{47}{100}$ miles, which length does not include some sewers within the streets which have been built by private parties. Total amount expended for reservoirs and drains from the organization of the city to the close of the year ending November 30th, 1871, as appears from Auditor's reports, is $309,014.16. It may also be deemed information of sufficient interest here to state that the expenditures for this department the past three years have not equaled the appropriations made by the City Council therefor; the year 1869 being $14,893.77, the year 1870, $9,808.43, and the past year $4,713.76, less than the appropriation for the year corresponding.

As provided by sec. 4 of the ordinance relating to sewers, the general superintendence of the above work has been performed by the City Engineer. A large portion of the construction and repairs this season has been under the immediate charge of Mr. Samuel Palmer, a gentleman of long experience in this branch of labor, and the work has been performed in a satisfactory manner. Sec. 6 of the ordinance referred to is fully complied with, the plans and computations for assessment having been reported upon at the completion of the work on the several sewers. There have also been completed, and submitted to the Board of Aldermen, the plan and computations for assessment upon the large territory embraced by the Oxford Street sewer and its numerous branches, and North Avenue from the Fitchburg railroad to the city limits.

It does not appear necessary to urge upon the attention of the City Council the importance of good drainage or to advert to its

influence upon public health and comfort. Its benefits are well known and have been recognized from the earliest periods of civilized government. Projects for the drainage of different sections of the city, now imperfectly provided for, will undoubtedly be pressed upon the City Government, and some are of sufficient magnitude and importance to entitle them to serious and immediate consideration. The lower section of Harvard Street is one to which allusion may be made. There is now no sewer in the street, and relief obtained in the past is nearly obliterated. If deemed of public necessity, the question will arise whether it shall be done in connection with, and as a part of, the improvement of the Washington Street district. By recent action this subject is referred to the consideration of the next City Government.

Reference should also be made to the subject of drainage into Miller's River and other matters connected therewith. Treatment successfully of this pestilential locality is a problem yet to be solved. The vigorous measures of the Board of Health, so productive of results in other sections this year, seem not to have attained equal success in their efforts to remove, temporarily, this nuisance, caused partially by drainage, but mainly by the establishments on its borders. A combination of sewerage and the refuse from tallow rendering, pork-packing and slaughter-houses, oil factory, and distillery, when discharged upon mud flats during the hot season, presents offensive peculiarities repugnant to the sight and smell, and justly receives indignant protests from all frequenters of the vicinity, or parties interested. Legislative action will be sought in the matter, as appears from notice published relating thereto. In considering the question of liability and responsibility, it is quite important to the City of Cambridge that particular attention be given to the practicability and desirability of diverting all the drainage of Cambridge from this creek through outlets less objectionable. How to dispose of the matter economically, successfully, and satisfactorily is to be determined. That the section referred to must be purified of its pollution and filth, can admit of no doubt; and one alternative seems certain, the sewage, with all attendant evils, must be diverted or carried, from its present points of deposit, to the more free action of tide water at the nearest point compatible with public health.

To meet calls of an unquestioned nature, liberal appropriations will be required for sewers and drains the coming year, as in the past, properly to advance these necessary measures of public progress.

## Bridges.

By reference to the ordinance relating to the department of Engineering and Surveying, it will be seen that it is made the duty of the City Engineer "to make annually, or oftener if required, a careful examination of all the bridges within the city limits, and make such reports respecting their condition as to safety, need of renewal or repairs, as the exigency of the case may require."

The following is a list of the bridges which the city has to maintain in whole or in part, namely: —

Brighton Street Bridge, across Charles River.
Western Avenue Bridge, " " "
River Street Bridge, " " "
Brookline Street Bridge, " " "
West Boston Bridge, " " "
Canal or Cragie's Bridge, " " "
Prison Point Bridge, across Miller's Creek.
Court Street Bridge, over Broad Canal.
North Avenue Bridge, over Fitchburg Railroad.
Walden Street Bridge, " " "

*The Brighton Street Bridge and Draw* are in good repair; the only material expense necessary to be incurred the coming year being for tending the draw by which the navigable rights of said river are preserved.

*Western Avenue Bridge.* The bridge and draw are in very good repair, and will require but little outlay this year.

*River Street Bridge.* This bridge needs attention; the bulkhead, or sides which hold the filling, is rotten, and should be renewed and rebuilt in a more substantial manner. The abutment wall has settled, the railing is unsafe, and should be renewed. The draw and other parts of the bridge not mentioned above are in very good repair. When alterations are made on this bridge, the coöperation of the town of Brighton should be secured, and the bridge widened to the full width of the street.

*Brookline Street Bridge* has recently been strengthened and

repaired by joint action of the town of Brookline and city of Cambridge, and is now in good repair.

*West Boston Bridge.* Extensive improvements have recently been made, dictated by, and under the direct care of the Hon. Ezra Parmenter and Hon. F. W. Lincoln, commissioners. No examination of said structure has been deemed requisite to be made by me.

*Canal Bridge.* The commissioners having jurisdiction over the West Boston Bridge also have superintendence of all matters pertaining to this bridge, therefore no critical examination of its present condition has been made by me.

*Prison Point Bridge.* The draw requires improvement and renewal to render it safe for public travel. The timber bulkhead is somewhat decayed, the hanging stringers are rotten at the hanging point, and are not safe. The head piece also requires to be renewed. Should it be deemed advisable to rebuild the draw, as provided by enactment, the repairs upon the present structure will be obviated as involved in the new draw. This unquestionably is the more economical course to pursue. The fender piers being upon the Charlestown side, and no change thereof involved in widening, the cost of the contemplated improvement would be very greatly reduced, consisting chiefly in the pulling of some old piles and the driving of new ones for preparing and strengthening foundations. When this alteration is made, I would recommend that the width of roadway of the draw be made to correspond more nearly with the width of the street, and also that its working gear be placed at the rear end of the same, dispensing with the present lifting process by posts and chains.

*Court Street Bridge.* This draw-bridge requires a general overhauling. The stone abutments are in a shaky condition, and need relaying or piles driven in front to preserve present condition. The draw posts are much decayed, and the superstructure generally requires renewal.

*North Avenue Bridge.* The roadway and sidewalks of this bridge are wood, resting upon stone abutments, and are in good repair. The westerly sidewalk truss should be removed, and the bridge widened to correspond with the westerly line of said avenue.

*Walden Street Bridge* is like the last described bridge, a wooden structure with no sidewalk, and rests upon stone abutments. It is now in sufficiently good repair.

This being the first Report on the condition of the bridges of the city, an appendix is attached which contains historical data concerning them up to the present time.

## Streets.

The largely increased expenditures, required and made upon our public streets and sidewalks the past year, have in like ratio enhanced the duties of the City Engineer in preparing plans preliminary to the improvement in progress, the giving of lines, grades, etc. The following streets have received the consideration of the city government the past year, been laid out and accepted as public streets, widened, or improved by alteration of the boundaries thereof.

*Allston Street.* An order passed laying out this street from Magazine Street to Brookline Street in May last, land being taken for the purpose of opening same from Magazine Street to a point 136 feet easterly. The ordinance relating to acceptance of streets is not complied with.

*Brattle Square.* A plan, made by direction of the Committee on Roads and Bridges for widening this square by taking land of M. T. Bigelow and others, was adopted, the widening ordered, and has been completed. This square has also been widened by taking land on easterly side from Mrs. Chapman.

*Brattle Street* from Harvard Square to Fresh Pond Lane has been widened, and the orders of the City Council relating to this extensive work fully executed. In consequence of the diverse opinions, litigation, and attendant delays, relating to the extent and manner of conducting the desirable improvement, unusual labor was required to be performed from this office. Plans, in detail, of the enterprise as well as of the street improved, and profile thereof, are on file in the office; and stone bounds have been placed indicating permanently the lines of the street as definitely established.

*Cedar Street* has been defined, widened, and improved, and the street finished in accordance therewith. A plan and profile are on record.

*Channing Street* is laid out as a public street fully in accordance with the ordinance relating thereto. A plan and profile are on file, and stone bounds have been set defining its location.

*Charles Street*, from Court to Fifth Street. A plan and profile have been prepared, but, owing to encroachments on the street, no definite action has been taken.

*Cottage Street*, from Magazine to River Street. A petition to lay out and accept this street was presented to the city government, but, the petitioners failing to comply with the regulations required, no action has been taken.

*Cottage Street, Ward* 5. A plan and profile have been made, with a view to widen the street and to lay out and accept the same. An order to this effect, and hereafter to designate it by the name of White Street, has not received final action.

*Eliot Street.* A proposition to widen this street at its intersection with Murray Street, after repeated hearings and arguments *pro* and *con.*, has been indefinitely postponed.

*Elm Street.* Plans and profiles of this street, as definitely established, have been furnished, but its acceptance is yet held in abeyance, the conditions required not having been complied with.

*Felton Street* has been laid out, graded, and accepted as a public street in full compliance with the ordinance relating thereto. A plan and profile have been furnished, and permanent stone bounds set at the intersections with Cambridge Street.

*Fifth Street*, between Charles and Spring Streets. A plan and profile have been prepared, but the encroachments upon said street preclude action upon its acceptance.

*Fifth Street*, from Gore to Winter Street. A plan and profile have been made, and an order recommending its acceptance 49 feet in width introduced, which proposition has not finally been acted upon.

*First Street*, from Cambridge to Otis Street. A plan and profile were prepared, following which, an order passed the City Council taking land and directing the obstructions to be removed.

*Franklin Street*, from Pleasant to Putnam Street, was laid out and accepted as a public street, with the grades thereof established in accordance with the plans presented by the petitioners therefor.

*Gardner Street.* A survey of this street was made with a view to its acceptance, and the plan prepared in accordance therewith. An order passed the City Council providing for the taking of land and its dedication to public uses, as also for the removal of obstructions. The street is now of the required width, and is constituted a public street.

*Green Street*, from Brookline to Sidney Street, has been accepted as a public street under the usual conditions. A plan and profile have been furnished for record.

*Highland Avenue.* A petition has been presented for acceptance accompanied by a plan and profile, but, the street being in an unacceptable condition, the Committee recommend its reference for future consideration.

*Irving Street*, from Broadway to Cambridge Street, has been laid out, graded, and accepted as a public street, in full compliance with the ordinance relating thereto, and a plan and profile furnished. Stone bounds have been set at the intersections with Broadway and Cambridge Street.

*James Street.* By direction of the Committee on Roads and Bridges, a survey and plan were made of this street for the consideration of the City Council upon the question of widening the same. The street has been laid out in accordance with the plan submitted, land being taken for the required improvement.

*Lincoln Street.* Upon petition for acceptance of this street, as no plan accompanied the request, reference was made to the consideration of the next city government.

*Mason Street.* Surveys and plans were made for improving the same, by widening on the westerly side, taking land of sundry persons, and building the street to the lines established. Stone bounds are set to indicate the present street lines.

*North Avenue.* A plan and profile of this street, from Harvard Square to the Fitchburg R. R. Bridge, were prepared by order of the City Council, for the purpose of defining and establishing more definitely the boundaries of said street. No order has been adopted with reference thereto. Also, in compliance with the directions contained in an order therefor, a survey was made for the purpose of changing the lines of this street between the Railroad Bridge and Beech Street, and a plan in accordance with the desire expressed has been made. The Committee on

Roads and Bridges reported a slight change in the line opposite the estate of the heirs of Benjamin Rand.

*Pearl Street*, from its southerly end as a public street (near Erie Street) south to the Marsh, was laid out and accepted as a public street forty feet in width. Plans and profiles have been prepared for record.

*Pleasant Street.* Plans and profiles of this street were presented for acceptance, but, in consequence of existing obstructions, action is delayed for future consideration.

*Pond Street.* A plan and profile of this street were presented by A. P. Morse, Esq., the petitioner for acceptance of this street, but, owing to obstructions existing, no definite action has been taken.

*Portland Street.* An order with reference to the grading and acceptance of this street was referred for the consideration of the next city government.

*Short Street*, from Magazine to Pleasant Street, is in the same position as Pond Street.

*Sparks Street*, from Brattle to Mount Auburn Street. A plan and profile have been prepared, but the petitioners for acceptance have received leave to withdraw.

*Spruce Street.* A plan and profile of this street, from North Avenue to the Lexington Branch Railroad track, have been prepared for record, the lines defined, and street widened, in accordance with the action had thereon. All obstructions have been removed and the street graded throughout. Stone bounds have been set to indicate the lines as defined.

*Third Street.* A survey and plan of this street, between Spring Street and Gore Street, were made for the purpose of showing the encroachments thereon and an order passed directing the removal of the same. Also, that part of the street north of Bridge Street is to be accepted and laid out as a public highway, as petitioned for, when the usual conditions are complied with, showing the street to be of the required width and unobstructed. No plan has yet been submitted.

*Trowbridge Street*, from Broadway to Cambridge Street, has been laid out, graded, and accepted as a public street, in full compliance with the ordinance relating thereto, and a plan and profile have been furnished by the petitioners. Stone bounds

have been placed at the intersections of said street with Broadway and Cambridge Street.

*Walnut Street.* Upon petition for an extension of this street from Pleasant to River Street no action has been taken, and the matter is referred to the next city government.

In connection with the above street improvements the past year, seventy permanent stone bounds have been set.

Surveys and profiles have been made for establishing the grades of numerous streets not mentioned above, when permanent improvements were being made or contemplated by the laying of sidewalks, etc.

Section fourth of the ordinance, "In relation to giving notice of intention to build, and for maintaining the lines of streets," provides that "no street shall be accepted as a public way until a certificate from the City Engineer has been placed on file with the City Clerk, to the effect that all encroachments upon the lines of said street, of whatever character, shall have been removed by the abutters, or with their consent without charge to the city; that is to say, it shall be a condition precedent to the acceptance of any street, by the City Council, that the City Engineer declare in the manner above mentioned that it is free from encroachments upon its lines."

Orders have been passed, for the laying out and acceptance of streets, regardless of the conditions set forth in the ordinance referred to, and I would suggest its modification or repeal, as may be deemed expedient for the interests of the city and parties petitioning, or a strict adherence to its requirements.

Some action from the City Council will be sought the coming year upon the matter of a new and spacious avenue to Boston. This will involve the consideration of questions of great importance, and I can but consider them entitled to the fullest attention. Its necessity, convenience, economical advantages, cost, method of construction, and particular location, may be enumerated as among questions to be solved.

That the building of such an avenue and bridge will secure great and increasing advantages to this city and the public generally, cannot admit of argument. Its final adoption is a foregone conclusion, and the question of time alone may be entitled to the most serious reflection.

## Water Works.

An order, approved March 2d last, directed the City Engineer to make investigations relative to alleged leakages in the main and supply pipes of the Cambridge Water Works. This order received careful attention, extending through several months, and the deductions drawn therefrom were reported at the time to the City Council. These reports, together with the report and doings of the Water Board upon the same subject, are on file, and I do not deem it of sufficient public importance to require further reference at this time.

Various requisitions from the Water Board for services and information have been met.

## Public Park.

By direction of the Joint Special Committee on a Public Park, surveys, plans, and computations were made of lands contemplated in the project named. The whole matter relating thereto has been referred to the next city government.

## Numbering Streets.

This improvement, in accordance with sundry orders passed by the City Council and the ordinance concerning this subject, has been completed this year. The execution of this work involved a large amount of labor and personal attention from this office. The system prepared has been quite universally adopted, and has given general satisfaction. It is believed, and admitted, to have conferred benefits upon the entire community far beyond all the difficulty and cost incurred. This is the first effort made for numbering the streets upon any regular or uniform system.

## Office.

During the past year, eight persons have been employed in the office, an average of four for the full time, including an assistant.

Total expenses of the office for the year, including the salary of the City Engineer and all sums paid for labor, repairs on instruments, conveyance, drawing paper and materials, stationery, etc., as appear from vouchers, $6,867.42.

Respectfully submitted,

J. G. CHASE,

*City Engineer.*

# APPENDIX.

*Brighton Street Bridge.* — This bridge was built previous to 1660, probably about 1656. In its earlier history it is known as "the Great Bridge." The General Court, in 1670, authorized the collection of a toll, "for the encouragement of Cambridge or any persons who shall repair and maintain it." In 1699, an act passed for the rebuilding of "Great Bridge," for which purpose the Province paid one hundred and fifty-three pounds toward the same, the County of Middlesex fifty pounds, Cambridge two thirds, and Newton one third of the further sum necessary. In 1712–1732, there was additional legislation. In 1734, the Province granted three thousand acres of land, one thousand to each of the towns of Cambridge, Newton, and Lexington, "to enable them to support the Great Bridge forever." In 1781, Newton was released from this care. In 1807, there was legislation respecting the conditions imposed upon Brighton and West Cambridge. In 1838, the Legislature authorized certain persons to construct, at their own expense, a draw and piers for the passage of vessels, to be maintained thereafter by the several towns named in said act. In 1860, the County Commissioners were authorized to lay out said bridge as a public highway. They determined it to be not of public convenience and necessity. On the 11th of March, 1862, the Legislature authorized the city of Cambridge and town of Brighton to rebuild said bridge and change the location of the draw therein, and provided for its care and maintenance thereafter. The northeasterly part thereof, from the centre of said draw, belongs to the city of Cambridge; the southwesterly part to the town of Brighton.

*Western Avenue Bridge.* — This bridge was built by the West Boston Bridge Corporation under the terms of an act passed June 12, 1824, and became the property of the Hancock Free Bridge Corporation under the terms of an act of March 26, 1846, by which it was supported until surrendered to the city. By

consent of said last named corporation said bridge, from the centre of the draw and division line between the city of Cambridge and town of Brighton, and the highway leading therefrom to Main Street were laid out and accepted by the city as a public highway on the 22d of December, 1855. That portion of the bridge and draw above described is maintained by the city, together with one half the cost of tending the draw, and the remainder of the bridge and draw, with the remaining cost for tending said draw, by the town of Brighton.

*River Street Bridge.* — This bridge, formerly known as the Brighton and Cambridgeport Bridge, was constructed by certain persons under an act of incorporation passed March 2, 1808. In November, 1832, the town of Cambridge voted "to adopt one half of the South Bridge leading from Cambridgeport to Brighton," and "to defray the entire expense of tending and raising the same for the passage of vessels until otherwise ordered." The centre of the draw forms the dividing line between Cambridge and Brighton, and this establishes the maintenance, care, and responsibility respectively.

*Brookline Street Bridge.* — The Cambridge and Brookline Bridge was built under an act of incorporation dated April 25, 1850. It was laid out as a public highway by act of the Legislature approved April 13, 1869. Tolls were abolished, and its care and maintenance assumed by the city of Cambridge and town of Brookline, in accordance with the provisions of said act last named, on the 6th day of April, 1870. The line of division for its care and support is fixed at the centre of said draw; the northeasterly part thereof belonging to the city of Cambridge, and the southwesterly part to the town of Brookline.

*West Boston Bridge.* — In 1739, permission was granted Job Stanford to build a bridge from Boston to Cambridge, from the west part of the town to Colonel Phipps' farm, but, for some reason, the design was abandoned.

On the 9th of March, 1792, an act of incorporation was approved by Governor Hancock, empowering certain persons to build "a bridge over Charles River, from the westerly part of

Boston near the "Pest House," so called, to Pelham's Island, in the town of Cambridge." For the privilege of taking tolls, etc., the corporation was to pay Harvard College three hundred pounds annually during the term of forty years.

June 30, 1792, the charter was extended to seventy years, and the amount to be paid to Harvard College reduced to two hundred pounds annually.

The causeway of the bridge was commenced July 15, 1792, and the wood work April 6, 1793. Their dimensions were as follows: —

| | | | | |
|---|---|---|---|---|
| The bridge on the Boston side (consisting of fourteen piers) . . . . . | 275 | feet | in | length. |
| The Boston abutment . . . . . | 87½ | " | " | " |
| The bridge proper (consisting of 180 piers) . | 3,483 | " | " | " |
| The causeway . . . . . | 3,344 | " | " | " |

Making the total length of bridge and causeway 7,189½ feet. On the Boston side there was a canal thirty feet wide on the north side of the causeway, — extending from the bridge to the toll-house, near the corner of South Russell Street. On the toll-house side of the causeway, toward the bridge, was the "Pest House" or hospital referred to in the charter. On the Cambridge end, and each side of the causeway, was a canal thirty feet wide, extending from the bridge to the toll-house, then standing nearly opposite the works now Allen & Endicott's. When Harvard Street was built, about 1805, the toll-house was removed to the end of the large bridge on "Pelham's Island," so called in the act of incorporation, which derived its name from once having been the property of Herbert Pelham, Esq., who came to Boston from England in 1645.

The bridge was opened to travel on the 23d of November, 1793. Its cost, with the causeway, amounted to upwards of $115.000, and, in those days, the undertaking was deemed of mammoth proportions.

In 1799–1800, appear the darkest days of the proprietary. Extensive repairs were required, as the original piles of the bridge were of pine and nearly destroyed by worms, making it necessary to replace them by others of oak.

On the 16th of April, 1846, the Legislature passed an act estab-

lishing the Hancock Free Bridge Corporation, by which powers were granted for the purchase of West Boston and Cragie's Bridges and the franchise thereof. A short time thereafter a purchase of both bridges was made.

West Boston Bridge was rebuilt after its purchase, for which purpose it was closed May 1, 1850.

May 25, 1853, authority was given to make solid that portion of said bridge from the westerly abutment to the commissioners' line. As rebuilt, its dimensions were as follows: 2,810 feet long, exclusive of the draw, and fifty feet in width. Seven hundred and fifty feet of the same were built solid on the Cambridge side, and sixty feet on the Boston side.

The bridge was opened November 21, 1854, and, for that day, was made free, the travel amounting to 2,445 foot passengers, 1,570 one-horse carriages, 300 carriages with two or more horses, 315 coaches, and 43 saddle horses, between sunrise and sunset.

The act of the Legislature of May 30, 1857, provides for abolishing the tolls on the West Boston and Cragie's Bridges.

On Saturday, the 30th day of January, 1858, tolls ceased on said bridges. This event was the occasion of thorough satisfaction and rejoicings by the citizens of Cambridge, as manifested by scenes of jubilation which took place on the following Monday, February 1. The public buildings were decorated, as well as those of private citizens. Many of them were illuminated in the evening, when there was a display of fireworks. The procession, more than a mile and a half long, headed by the Lancers, moved from the "Athenæum," now City Hall, down Main Street to the draw, where a formal surrender was made by Hon. Isaac Livermore, as the head of the Hancock Free Bridge Corporation, and the charge accepted by Hon. John Sargent, then Mayor of the city, who proclaimed the bridge "free forever," upon which the multitude shouted with an enthusiasm which indicated that their delight was heartfelt and sincere. The same ceremonies took place on Cragie's Bridge with the same manifest results.

Both of said bridges were laid out as highways by act of the Legislature June 1, 1870. Said act provides for the support of said bridges, and draws therein, as also for the appointment of

commissioners, under whose sole direction future repairs, or rebuilding and care of the same are placed.

*Canal Bridge.* — This bridge, now known as Cragie's Bridge, was built under an act of incorporation passed the 27th of February, 1807, and opened for travel in August, 1809. Before Canal Bridge was commenced there was but one house on "Lechmere Point," all the land being used for farming purposes by two brothers named Russell. The Point was reached by a narrow way extending from Cambridgeport by the old dwelling-house of Andrew Boardman. The bridge was purchased by the Hancock Free Bridge Corporation, in conformity with the terms of the act of 1846. Thence succeeded its transformation to a free bridge, its subsequent care and present supervision being defined by acts passed 1857, 1858, and 1870. The total amount collected for tolls on this bridge and the West Boston Bridge was upwards of $2,000,000.

*Prison Point Bridge.* — This bridge was laid out as a highway by the County Commissioners under an act of the Legislature of April 24, 1838. A change in its location was authorized April 27, 1854. June 1, 1870, the Legislature provided for a draw, in lieu of the existing draw in said bridge, and for the appointment of one commissioner by the city of Cambridge and by the city of Charlestown, to have the care and management of said draw.

By act of June 23, 1870, the width or opening of said draw was fixed to be thirty-six feet in the clear. No action has been taken by either of said cities with reference to the provisions named in the acts referred to. The maintenance and care of said draw is now, and as provided is to be, borne by the cities of Cambridge and Charlestown, the centre of the draw forming the boundary line between said cities.

*Court Street Bridge.* — Court Street, from Otis Street to Main Street, was laid out by the County Commissioners on the 25th of October, 1831, and a draw-bridge ordered to be constructed over Broad Canal, which is maintained by the city.

*North Avenue Bridge.* — This bridge was built by the Charles-

town Branch Railroad Company some years previous to the incorporation of the Fitchburg Railroad Company. Since the act by which the latter company was created, it has been maintained by said company until December, 1869, when the superstructure of the bridge was assumed by the city as per agreement, which appears from papers on file in the office of the City Clerk.

*Walden Street Bridge.* — This bridge was built by the Charlestown Branch Railroad Company, and, under the charter of the Fitchburg Railroad Company becoming the property of said company, has since been, and is now maintained by said company.

# REPORT

OF

# BRIDGE COMMISSIONER.

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*To the Honorable the City Council of Cambridge:* —

In compliance with the requirement of the third section of the "Ordinance in relation to the care and management of West Boston and Cragie's Bridges," the undersigned, Commissioner under said ordinance submits the following report: —

## West Boston Bridge.

It was evident, after a thorough examination, that West Boston Bridge, in order to meet the convenience and safety of public travel, should undergo very extensive repairs, involving almost the entire rebuilding of the superstructure, and its repaving. Contracts were therefore made with Messrs. Ross & Lord for the principal performance of the work, according to plans and specifications furnished by N. H. Crafts, Esq., Engineer for the city of Boston. This bridge is nearly completed, and the final estimate of the Engineer soon to be presented will give a detailed account of the work done, materials used, and cost of the same.

## Cragie's Bridge.

This bridge also requires the most substantial repairs for the increasing demands of public use. The bridge should be widened, and a new draw constructed. The Commissioners have procured an estimate of the cost of widening to conform to the width of Bridge Street, namely, seventy-five feet, of repairing; and of building a new draw and draw-pier. Plans and specifications have been prepared, upon which the estimate of cost has been

based. The estimated cost amounts to ($213,974.00) two hundred and thirteen thousand nine hundred and seventy-four dollars.

The amounts expended upon the bridges from June 1, 1871, to December 1, 1871, which were chargeable to the City of Cambridge, are herewith submitted.

| | |
|---|---|
| For salaries of Superintendents of draws and Assistants | $500.00 |
| For care of lamps | 55.85 |
| For labor and minor repairs | 20.37 |
| For lumber | 16.06 |
| For buoy and stone | 98.05 |
| For construction of cesspools and drains | 495.00 |
| For Engineer's pay-roll | 160.00 |
| Ross & Lord, repairs of draw on Cragie's Bridge | 568.74 |
| Ross & Lord, repairs of draw on West Boston Bridge | 1,027.86 |
| Ross & Lord, on account of contract for repairs on West Boston Bridge | 14,707.28 |
| Compensation of Commissioner | 250.00 |
| | $17,899.21 |

The number of times the draw has been opened from January 1, 1871, to December 1, 1871: —

| | |
|---|---|
| On West Boston Bridge | 1,526 |
| On Cragie's Bridge | 3,552 |

Respectfully submitted.

EZRA PARMENTER,
*Commissioner.*

# ANNUAL REPORT

OF THE

# TRUSTEES OF THE DANA LIBRARY.

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*To the Honorable City Council of Cambridge : —*

The Board of Trustees of the Dana Library, in presenting their Fourteenth Annual Report, would express their pleasure at the continuation of the interest of the public in the Library, yet they feel that the value of the Library is not fully known or appreciated. We find the number of subscribers this year is two hundred and ninety-nine, against three hundred and thirty-one last year, showing a decrease of thirty-two, while the number of books given out this year exceeds that of last four hundred and forty; showing an increase of interest in those who do subscribe.

The Trustees have leased and fitted up an additional room, to be used as a reading-room, as there are many large and valuable works of Art and Science which cannot be given out. These, with the leading periodicals of the day, will open to the public a new source of entertainment and instruction, which, it is hoped, will lead to a large increase in the number of subscribers.

The whole number of books in the Library exclusive of the unbound books, is five thousand three hundred and four. At the annual examination of the Library there were only five books missing unaccounted for. Five hundred and sixty-two volumes have been received from the city through the annual appropriation, and thirty-seven from individuals, as follows : —

Mr. Edwin Devoe, one; T. W. Bicknell, one; Unknown, one; Dr. Mahaffey, twenty-five ; Geo. P. Carter, two; John S. March, one ; F. G. Bromberg, two; J. B. Wiggin, one; S. S. Strachan, one ; and Miss A. C. Cummings, two ; making the whole number added, five hundred and ninety-nine.

Unbound numbers of the "London Athenæum" for four years were received from Miss Sarah S. Jacobs; unbound numbers of the "Young Folks" for one year from Miss Minnie Harding; Reports from the Libraries of Watertown, Charlestown, and Manchester, besides magazines and papers from the city.

| | |
|---|---|
| Amount received from subscribers | $299.00 |
| " " " fines | 19.43 |
| " " " sale of catalogues | 11.75 |
| Making a total of | $330.18 |

Which has been paid into the City Treasury.

| | |
|---|---|
| Number of volumes given out | 13,703 |
| Weekly average | 291 |
| The largest number in any week being | 389 |
| " " " " " day " | 200 |

| | | |
|---|---|---|
| The amount of the City's Appropriation was | | $3,087.06 |
| Of this amount have been expended, — | | |
| For salary of Librarian | $350.00 | |
| " " " Assistant | 50.00 | |
| " rent and care of room | 375.00 | |
| " books and stationery | 1,802.98 | |
| " bookcase | 89.49 | |
| " other expenses | 226.65 | |
| | | $2,894.12 |
| Balance unexpended | | 192.94 |

Respectfully submitted.

H. R HARDING,
CHARLES DEANE,
W. W. WELLINGTON,
JAMES RICHARDSON,
JOSEPH A. HOLMES,
ANSON P. HOOKER.

*Trustees of the Dana Library.*

CAMBRIDGE, *December* 22, 1871.

# REPORT

OF THE

# TRUSTEES OF THE DOWSE INSTITUTE.

---

*To the Honorable City Council of Cambridge:* —

The Board of Trustees of the Dowse Institute would respectfully report.

The lectures of the last season were given at Lyceum Hall, the old City Hall having been remodeled, and no longer containing a lecture-room.

The regular course consisted of lectures by George W. Curtis, W. H. Niles, William Parsons, W. H. H. Murray, and E. H. Chapin; of readings by Henry Nicholls and George Vandenhoff; and of a concert by the Mendelssohn Quintette Club.

By the liberality of the trustees of the estate of the late Robert Waterston, Esq., two excellent lectures on California, by Rev. R. C. Waterston, were added to the course without cost to the Institute.

A gratuitous lecture was also kindly given by Gardiner G. Hubbard, Esq., on the electric telegraph.

The following is an abstract of the Annual Report of the Treasurer, a copy of which accompanies this report: —

*Dr.*

| | |
|---|---|
| To paid for lectures, readings, and concert . . . . | $1,012.50 |
| " " " use of hall . . . . . | 110.00 |
| " " " doorkeepers and attendance . . . . . | 66.00 |
| " " " printing, advertising, etc. . . . . | 46.00 |
| | $1,234.50 |
| To balance to new account . . . . . | 32.14 |
| | $1,266.64 |

*Cr.*

| | |
|---|---|
| By balance from last account . . . . . | $27.64 |
| " interest, City of Cambridge . . . . . | 600.00 |
| " sale of tickets . . . . . | 419.00 |
| " gift from Trustees of R. Waterston . . . . . | 220.00 |
| | $1,266.64 |

Respectfully submitted.

CHARLES DEANE,
H. R. HARDING,
JOHN C. DODGE,
JOSEPH H. CONVERSE,
W. W. WELLINGTON,
} *Board of Trustees.*

CAMBRIDGE, *November* 20, 1871.

# REPORT

OF THE

# TRUSTEES OF THE SANDERS TEMPERANCE FUND.

---

The Trustees of the Sanders Temperance Fund respectfully submit to the City Council their seventh Annual Report for the financial year ending November 30, 1871.

The Fund ($10,000) remains invested, as heretofore, in notes of the city, bearing interest at six per cent., and producing an income of six hundred dollars, which has all been paid to the Missionary.

Mr. Samuel C. Knights has been continued in the position of Missionary during the year. We have every reason to believe that his efforts for the reformation of men and women who had acquired an appetite for intoxicating drinks, have been quite successful. His connection with the temperance cause for many years, and his active labors therein, have given him a special knowledge of the subject, and of the best and most efficient ways by which to reach the victims of this terrible vice, and to rescue them from the consequences of excessive indulgence.

We present herewith the Report of the Missionary, in which he gives a clear statement of the work done by him, and mentions some encouraging facts in relation to the beneficial change which his efforts have wrought in the habits of men who were fast travelling the road to ruin, but who have been directed into other and better paths which lead to comfort, contentment, and happiness.

H. R. HARDING,
JAMES H. HALL,
JOSEPH H. CONVERSE,
A. P. CLARKE,
*Trustees of the Sanders Temperance Fund.*

# REPORT OF SAMUEL C. KNIGHTS,

## SANDERS TEMPERANCE FUND MISSIONARY.

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*To the Honorable the Board of Trustees of the Sanders Temperance Fund: —*

Gentlemen, — I respectfully beg leave to submit the following report of my labors as agent of the Sanders Temperance Fund for the past year.

The temperance meetings have been held in Williams' Hall each Sunday evening as in the previous year, and always with unabated interest. A great amount of good has been effected, as large numbers have signed the pledge, and the reformation in most instances has been permanent up to the present time.

I have labored in all cases to assist those desiring to reform by every means in my power, by procuring them employment, by advice, and, where it was advisable, by pecuniary assistance. Many of these reformations have taken place in families of respectable standing in society, and have been the means of bringing comfort and happiness into home circles which were fast becoming the abode of nothing but misery. Still others have been brought to take an active interest in the temperance cause, and by laboring for the good of others help to keep their own good resolutions still stronger.

I have been a constant visitor at the Station Houses, the Police Court, and the House of Correction, and I trust that my labors in those places have been productive of good, as many are first brought to a realizing sense of the life they have been leading, when they find themselves in the clutches of the law.

I have addressed the inmates of the House of Correction on several Sundays, and have always found listeners who were ready and anxious to reform. I have met many on their dis-

charge from that institution with the hand of welcome, and assisted some to a new start in life, and others to their homes in this or other States.

I desire to tender my thanks to Mr. Adams, the keeper of the House of Correction, to the Judge of the Police Court, the Chief of Police, and the policemen of our city, for their uniform kindness and attention in my intercourse with them, the information which they were always willing to give being in many cases invaluable.

In conclusion I would say that, should the Committee desire it, I will give them still further information and details, which it would be scarcely expedient to publish in a public document, as in this cause more good can often be effected by quiet means than by any other.

Respectfully submitted,

SAMUEL C. KNIGHTS,
*Agent Sanders Temperance Fund.*

CAMBRIDGE, *December* 31, 1871.

# REPORT

OF

## ENOCH J. HOWLETT,

MILK INSPECTOR.

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*To his Honor the Mayor and City Council of the City of Cambridge:—*

The undersigned would respectfully submit his Fourth Annual Report for the year ending December 1, 1871:—

The milk trade of the city is divided into three classes: 1st. Those dealers who sell from wagons or carriages. 2d. Those dealers who sell from their stores or shops. 3d. Those who keep cows, and sell to the families in their neighborhood.

There have been recorded the names and residences of dealers selling from their wagons and carriages since last Report . . . . . 4

There have been recorded the names of those dealers who sell from their stores or shops . . . . . 32

Whole number of dealers who sell from their wagons or carriages recorded . . . . . 46

Whole number of dealers who sell from their stores or shops recorded . . . . . 240

Whole number of persons keeping cows registered . . . 62

Number of cows kept by those registered . . . . . 104

All places where milk is publicly sold in the city have been visited, and the milk inspected. I have answered every call to inspect milk left at the dwelling-houses of the citizens by the dealers. The milk left at the dwellings of the citizens by the dealers, will compare favorably with that sold in the adjacent cities. Of the number of samples of milk inspected during the

year, but a small per cent. was found to be adulterated, although not up to the standard of good, rich milk, being deficient in cream, and of a thin, bluish cast, being, in my opinion, produced by poor feed, and forcing the cows to drink large quantities of water, to allay the thirst created by the over-feeding of salt with their food. The standard of good rich milk is twenty degrees; the standard of the milk sold in the city is sixteen to eighteen degrees. The milk produced by those cows kept within the city limits, and fed, as many of them are, with good hay and meal, without endeavoring to increase the quantity beyond the natural amount, will stand up to the standard of twenty degrees; while cows fed, as many of them are now, with the poorest hay and brewers' grain, with plenty of salt to increase their thirst, thereby increasing the quantity but not the quality of the milk produced, will not show more than from sixteen to eighteen degrees. I have been informed that many of the producers or dairymen have a plan of feeding which will increase the amount of milk produced nearly one third, and the quality of the milk deteriorates in like manner. Their mode of feeding: the hay, which is of the poorest quality, is first finely cut or chopped, and placed in a large box or trough, with alternate layers of meal or brewers' grain and salt, and hot water turned in upon the whole mass, remaining until the whole is thoroughly permeated with the steam, and then fed out to the cows. It being soft, salt, and palatable, they eat of it with a relish, and being very thirsty after eating, drink large quantities of water, thereby producing a large quantity of poor milk, that will not produce butter in sufficient quantity to be profitable; it is sold to the consumers for family use.

Another mode of increasing the profits of the dairy, also reducing the richness of the milk, that has been practiced by the dairymen, is to set the night's milking until the morning milking, and then skim off the cream that has risen during the night and mix with the morning milk the balance of the night's milk, which would be nothing more than skim milk, and then send to market the milk as good rich milk, which would not have more than one half the amount of cream that should be; the cream to be used for butter making, or sold to confectionery and ice-cream saloons for more than double the price of milk.

There have been but few complaints during the year. In the early months of spring the complaint was that the milk soured, which was on account of the extreme warm weather for the season, and the want of proper care of the milk by the dairymen, in neglecting to ice, or place the milk in cool places (as in summer months) for the animal heat to pass off before stopping up the cans.

In former years it was not uncommon to have offered for sale milk that was adulterated to the extent of one half added water, which at that time was known by the name of split milk, half water; but since the enactment of the law for the inspection of milk, such has not been the case, and there is not a dealer who would dare offer such milk for sale.

There appears to be a disposition on the part of the citizens to discharge or change their milkman, if the milk delivered to them by him should not prove to be good, instead of entering a complaint with the inspector. If all who are not satisfied with the milk left at their houses would send to the office of the inspector a sample of the milk left, with the dealer's name, they would assist the officer in detecting those who would try to sell poor or adulterated milk.

Respectfully submitted,

ENOCH J. HOWLETT,

*Milk Inspector.*

# REPORT

OF

# SEALER OF WEIGHTS AND MEASURES.

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*To his Honor the Mayor and City Council of the City of Cambridge:—*

The undersigned would respectfully submit his Third Annual Report, for the year ending December 1, 1871: —

During the year I have visited all stores, shops, manufactories, and places where scales, weights, or measures have been in use either for buying or selling, and have tried, proved, adjusted, and sealed all scales, weights, or measures found in said places.

| | |
|---|---|
| Number of places visited | 482 |
| Number of scales sealed | 756 |
| Number of scales adjusted | 142 |
| Number of scales condemned | 16 |
| Number of weights sealed | 3,117 |
| Number of weights adjusted | 461 |
| Number of weights condemned | 13 |
| Number of measures sealed | 2,269 |
| Number of measures adjusted | 91 |
| Number of measures condemned | 99 |
| Number of yard measures sealed | 73 |
| Number of yard measures condemned | 1 |
| Number of charcoal baskets sealed | 8 |
| Number of charcoal baskets condemned | 2 |

The following table will show some of the business places visited: —

| | | | |
|---|---|---|---|
| Apothecaries | 19 | Glass | 3 |
| Butter and Cheese | 3 | Grain | 5 |
| Bakeries | 13 | Groceries | 126 |
| Bread and Cake | 9 | Groceries and Provisions | 29 |
| Book Binderies | 2 | Hardware | 8 |
| Brass Foundries | 9 | Iron Foundries | 4 |
| Butchers | 2 | Ice Sheds | 2 |
| Bacon Works | 1 | Ice Tools Manufactory | 1 |
| Confectioners | 12 | Junk Store | 1 |
| Cement | 1 | Machinists | 6 |
| Cigars | 6 | Milliners | 3 |
| Coal Wharves | 19 | News Depot | 5 |
| Charcoal | 2 | Pork Packers | 3 |
| City Scales | 6 | Plumbers | 4 |
| Curriers | 6 | Paint | 2 |
| Dry Goods | 18 | Paper Collar Manufactory | 1 |
| Dress Makers | 4 | Stoves | 6 |
| Distillery | 1 | Stone Wharves | 3 |
| Furniture | 2 | Tailors | 3 |
| Flour | 1 | Tin Works | 4 |
| Fruit | 1 | Variety | 17 |
| Fish | 9 | | |

The subject of weights and measures is something that is of interest to every family in the city, and a uniform standard of weights and measures should claim our serious attention.

The law passed by the Legislature in relation to the sealing of weights and measures, which has been in force now nearly two years, has, as far as my observation and knowledge have extended, given the most general satisfaction.

Where the benefits that were to be derived were equal with both dealer and purchaser, I could not understand why the dealer should yearly pay for the inspection and sealing of his scales, weights, and measures. It has long been thought that a change should be made, and that the towns and cities should pay the expenses of inspection. True, the dealer could add the expense to the cost of his merchandise, thereby compelling the purchaser to pay the cost of inspection and sealing; nearly all dealers would say that those incidental expenses are not thought of until they occur, and then they are an annoyance as well as expense. Under the present law, all the expenses of inspection and sealing are paid by the city; and what was an unpleasant duty to both dealer and sealer, is now done with cheerfulness and alacrity by both.

Many of the dealers are of the opinion that if the scale will show a balance, it must of course give correct weight. Such is not the case with the scales now in use. The scales formerly in use were simply a beam working upon a centre pivot or axle, with a pan attached to each end of the beam; and if correct, the weight in the two pans must correspond, to maintain the balance. The scales now in use work upon the lever principle to produce a balance, acting upon a number of steel pivots, with sharp knife edges, and when new a half sheet of paper will turn them either way. As the pivots become worn or dull their movement is retarded, a greater weight is required to turn them, and the scales are less accurate.

The weights of the platform scales are adjusted upon the ratio of one pound to the hundred; that is, a poise weight weighing one pound placed upon the counterpoise, will require one hundred pounds upon the platform to raise the beam. As the pivots become worn or dull by rust or other causes, it will be found that it requires more than one hundred pounds to raise the beam, although there may be an even balance before weighing. The variation is according to the dullness or amount of rust generally upon the pivots. Scales that have been adjusted during the year by the sealer, have varied from eight ounces to two pounds to the hundred weight.

I have tried, proved, and (where required) adjusted all scales, weights, and measures in use in the stores, shops, and manufactories within the city limits; have also proved and sealed all hay or city scales. The greatest variation found upon either of the city scales was upon the scales on River Street, Ward Four, where it was eight pounds to the thousand pounds.

The present law makes it obligatory upon the persons using scales, weights, or measures, for the purpose of selling any goods or wares, to have them adjusted, sealed, and recorded upon the sealer's book at his office; and they shall thereafter be responsible for the correctness and exactness of the same.

Also, if any person shall sell, or expose for sale, any goods, wares, or merchandise, fruit, or other commodity whatsoever, by any beams, weights, or measures, that have not been sealed, as provided by law, he shall for each offense forfeit to the use of the city a sum not exceeding ten dollars.

And whosoever sells by any other weights, measures, scales, beams, or balances than those which have been thus sealed, shall forfeit a sum not exceeding twenty dollars for each offense.

My attention has been called during the year to the charcoal trade of the city, which is carried on by persons hawking or peddling from street to street with wagons, and selling from house to house. If the citizens would not purchase of them unless they could show a basket, plainly sealed by the two letters, C. C. being burnt in upon the bands of the basket, they would assist the sealer in stopping the cheating now practiced. Any person, by having a rule or piece of wood of nineteen inches in length, may soon satisfy himself in regard to the size of the basket, which should measure nineteen inches in diameter, and eighteen inches and one tenth of an inch in depth. The quart measure used by the milkmen of the city I have not sealed, and my reasons are these: many if not all the milkmen use what is called the "Lexington quart," made, not like other quart measures, with a lip upon the front to prevent the spilling of the contents in turning out, but with a lip entirely round the measure, which does not hold a quart unless filled level full to the top of the lip. The rule for sealing measures in this and the adjacent cities, is to seal to the top wire of the measure and not to the top of the lip. Persons not acquainted with the measure would naturally fill it only to the wire, consequently they are easily deceived in the quantity of milk. For these reasons I think the "Lexington quart" an unlawful measure.

*Schedule of City Property contained in the Sealer's Office.*

One set Avoirdupois Weights.
One Balance and case.
One set Standard Dry Measures.
One set Standard Wine Measures.
One brass Yard Stick.
One working set Avoirdupois Weights (brass) in case.
One working set Dry Measures (copper).
One working set Wine Measures (copper).
One working Yard Stick (wooden).
One pair Try Scales and case.
Forty fifty-pound weights (iron).

One Drill Stock and Drills.
One Hammer.
One Mallet.
One Vise.
One Wrench.
One Knife.
One Spirit Level.
One Screw Driver.
One pair Nippers.
One pair Cut Nippers.
One Brand, letter C.
One Brand, two letter C.
Three Stamps, letter C.
Two Cases.
One File.
One Punch.
Half bushel of Flax Seed.
Small quantity of Shot and Lead.
One Charcoal Basket Measure, in case.

Respectfully submitted,

E. J. HOWLETT,

*Sealer of Weights and Measures.*

# REPORT

OF THE

## CAMBRIDGE WATER BOARD.

---

In accordance with the requirements of the City Ordinance, the Cambridge Water Board herewith submit to the City Council their seventh Annual Report.

For the details of work done, expenditures and receipts, we would refer you to the Reports of the Water Registrar, and the Superintendent of the Water Works, presented to this Board this day, and herewith presented as a part of our Report.

| | |
|---|---|
| The net cost of the Water Works to Nov. 30, 1870, as appears by our last Annual Report, was . . . . . | $885,007.15 |
| Add balance for extension account, Nov. 30, 1865 | 3,408.91 |
| There have been expended for extension for the year ending Nov. 30, 1871 . . . . . | 56,730.39 |
| Making cost of Water Works Nov. 30, 1871 | $945,146.45 |

| | |
|---|---|
| The receipts for water rates for the year ending Nov. 30, 1871, were . . . . . | $111,782.65 |
| Receipts during same time in 1870 . . . . . | 92,606.95 |
| Showing increase for 1871 . . . . . | $19,175.70 |

The following statement will show the entire transactions on account of the Water Works for the year ending November 30, 1871.

**Received.**

| | |
|---|---|
| Appropriations for Extension Account . . . . | $90,000.00 |
| From water rates . . . . . | 111,782.65 |
| From Supply Account, and shutting off and letting on the water . . . . . | 15,750.85 |
| Sale of old iron pipe . . . . . | 539.21 |
| Balance of interest from City Treasurer on Temporary Loans . . . . . | 2,578.27 |
| Interest from Sinking Fund . . . . . | 3,451.19 |
| | $224,102.17 |

**Expended.**

| | |
|---|---|
| For Extension account . . . . . | $56,730.39 |
| " Care and repairs . . . . . | 21,188.67 |
| " Supply account . . . . . | 15,342.36 |
| " Interest paid on water debt to Nov. 30, 1871 . | 53,304.00 |
| Amount of Appropriation unexpended . . . . | 33,269.61 |
| Balance showing gain in 1871 . . . . . | 44,267.14 |
| | $224,102.17 |

The following statement will show the original cost of the Water Works, with the Extension added from year to year, to November 30, 1871.

| | |
|---|---|
| Cost of the Works in . . . 1865 . . . . . | $291,480.00 |
| Expended in extension, balance 1865 . . . . . | 3,408.91 |
| " " " 1866 . . . . . | 88,185.74 |
| " " " 1867 . . . . . | 188,625.06 |
| " " " 1868 . . . . . | 160,496.38 |
| " " " 1869 . . . . . | 99,313.51 |
| " " " 1870 . . . . . | 56,906.46 |
| " " " 1871 . . . . . | 56,730.39 |
| Total cost Nov. 30, 1871 . . . . . | $945,146.45 |

We now present sundry statements showing in brief all other transactions besides the cost and extension account, on account of the Water Works each year since their purchase, with the annual gain.

## 1865.

RECEIVED.

| | | |
|---|---|---|
| Water rates . . . . . | $32,367.19 | |
| Supply account . . . . | 3,826.34 | |
| Sundries . . . . . | 1,411.95 | |
| | | $37,605.48 |

EXPENDED.

| | | |
|---|---|---|
| Care and repairs . . . | $7,196.58 | |
| Supply account . . . . | 5,230.45 | |
| Interest . . . . . | 7,062.79 | |
| | | 19,489.82 |
| Balance, showing gain in 1865, | | $18,115.66 |

## 1866.

RECEIVED.

| | | |
|---|---|---|
| Water rates . . . . . | $40,073.27 | |
| Supply account . . . . | 10,883.30 | |
| Interest . . . . . | 442.05 | |
| | | $51,398.62 |

EXPENDED.

| | | |
|---|---|---|
| Care and repairs . . . | $13,791.00 | |
| Supply account . . . . | 8,878.80 | |
| Interest . . . . . | 17,484.00 | |
| | | 40,153.80 |
| Balance, showing gain in 1866, | | $11,244.82 |

## 1867.

RECEIVED.

| | | |
|---|---|---|
| Water rates . . . . . | $52,733.62 | |
| Supply account . . . . | 11,647.55 | |
| Sundries . . . . . | 1,659.49 | |
| Interest . . . . . | 1,609.72 | |
| | | $67,650.38 |

EXPENDED.

| | | |
|---|---|---|
| Care and repairs . . . | $17,813.32 | |
| Supply account . . . . | 9,765.14 | |
| Interest . . . . . | 27,984.00 | |
| Discount on bonds . . . | 1,067.21 | |
| | | 56,629.67 |
| Balance, showing gain in 1867, | | $11,020.71 |

## 1868.

RECEIVED.

| | | |
|---|---|---|
| Water rates . . . . . | $63,747.42 | |
| Supply account . . . . | 13,315.43 | |
| Sundries . . . . . | 2,371.71 | |
| Interest . . . . . | 4,328.81 | |
| | | $83,763.37 |

EXPENDED.

| | | |
|---|---|---|
| Care and repairs . . . | $16,508.85 | |
| Supply account . . . . | 13,461.91 | |
| Interest . . . . . | 37,014.00 | |
| Discount on bonds . . . | 2,809.11 | |
| | | 69,793.87 |
| Balance, showing gain in 1868, | | $13,969.50 |

## 1869.

RECEIVED.

| | | |
|---|---|---|
| Water rates . . . . . | $76,149.30 | |
| Supply account . . . . | 14,150.23 | |
| Sundries . . . . . | 1,048.39 | |
| Interest . . . . . | 1,133.84 | |
| | | $92,481.76 |

EXPENDED.

| | | |
|---|---|---|
| Care and repairs . . . | $20,082.91 | |
| Supply account . . . . | 13,465.91 | |
| Interest . . . . . | 46,344.00 | |
| | | 79,892.82 |
| Balance, showing gain in 1869, | | $12,588.94 |

## 1870.

RECEIVED.

| | | |
|---|---|---|
| Water rates . . . . . | $92,606.95 | |
| Supply account . . . . | 16,382.93 | |
| Sundries . . . . . | 509.08 | |
| Interest . . . . . | 5,793.94 | |
| Land sale . . . . . | 6,582.74 | |
| Somerville pipes . . . | 4,753.01 | |
| | | $126,628.65 |

| | | |
|---|---|---|
| Amount brought forward . . . | | $126,628.65 |
| EXPENDED. | | |
| Care and repairs . . . | $19,014.43 | |
| Supply account . . . . | 14,999.57 | |
| Interest . . . . . | 49,704.00 | |
| | 83,718.00 | |
| Balance, showing gain in 1870, | | $42,910.65 |

1871.

| | | |
|---|---|---|
| RECEIVED. | | |
| Water rates . . . . . | $111,782.65 | |
| Supply account . . . . | 15,750.85 | |
| Sundries . . . . . | 539.21 | |
| Interest . . . . . | 6,029.46 | |
| | $134,102.17 | |
| EXPENDED. | | |
| Care and repairs . . . | $21,188.67 | |
| Supply account . . . . | 15,342.36 | |
| Interest . . . . . | 53,304.00 | |
| | 89,835.03 | |
| Balance, showing gain in 1871, | | $44,267.14 |

As it is a part of our duty to present to the City Council from time to time for their consideration, such things as in our judgment are needed to perfect, so far as may be, the work so well begun, we would call your attention to the following statements and recommendations.

We have just passed through the second successive season of extreme drought, and consequent very low stage of water in Fresh Pond. The fact that we are not properly connected with any of our resources for water except Fresh Pond, has been the cause of some anxiety to the members of the Board. It is not desirable and scarcely endurable that a community of 40,000 persons should run anywhere near a water famine, and we have asked in all seriousness what is best for us to do to prevent the possibility of such an event.

The water in Fresh Pond is so remarkably pure and good, that we think, first of all, every effort should be made to store and husband all we can from this source. Fresh Pond is Cambridge's great natural reservoir. Using the water as we do through a

stand-pipe, we use it in the same condition that it comes from the pond, hence the great importance of giving every attention to the purity of the water in the pond; and in this connection we would call your particular attention to the necessity of cleaning out some portions of the pond at the earliest practicable moment. Although the pipe through which the water is conducted to the pump is carried far out into deep water, the screens are often so obstructed by vegetable matter detached from the shallow borders of the pond as to require much labor to keep them free. By removing the vegetable accumulations from an area estimated to cover about seventeen acres, the pond will become comparatively purified, and at the same time the storage capacity considerably increased. There should be no delay in attending to this matter.

The act under which we take the water does not allow us to raise the water above "high-water mark." The only objection that we can see to raising it higher, if we can thereby retain the water, is in regard to the fish running in from Alewife Brook, but as the fisheries are now of comparatively little value, we think this objection might be overruled in our favor if the subject were properly represented to the Legislature.

If we could hold the water three feet above high-water mark, it would give us about 195,000,000 gallons more in the pond, and increase our supply from this source by just that amount.

In our last Annual Report we presented a detailed statement, purporting to show the estimated capacity of our present water supply, comprising Fresh, Little, Spy Ponds, etc., but more particularly showing the supposed capacity of Fresh Pond to furnish a large amount of water from some unseen source.

We find by reëxamination of our statement of last year, and comparison with a Report made by the President of the old Water Company in 1857, which was the basis upon which our statement was made up, that by a misunderstanding of the figures therein we fell into an error, which in the results reached by us led us far astray in regard to the amount of water supposed to be furnished by Fresh Pond from unseen sources.

After correcting this error we find that instead of rating the measurement of the pond at 3,000,000 gallons per inch at low-water mark, it should be 5,000,000 per inch.

We have not seen anything in the principles upon which the calculations were made that was wrong, but careful scrutiny has confirmed us in their substantial correctness.

We now present to you a statement made on the same principles as last year, reckoning 5,000,000 gallons to one inch in the pond, and 320 gallons per revolution of the pumping engine; and with the following as the basis of our calculations: —

*First.* We cover the time from July 2 to November 21, in 1870 and 1871.

*Second.* The water-shed of Fresh Pond is estimated at 1,200 acres.

*Third.* The area of the pond in making up the amount of rain-fall is estimated at 200 acres.

*Fourth.* The evaporation from the surface of the pond will be equal to the rain-fall on its surface, leaving us 1,000 acres to gather rain-fall from.

*Fifth.* It is allowed that four tenths of the rain-fall outside the pond finds its way into the pond.

*Sixth.* In estimating the amount of water the pond will furnish per inch, we call the surface 185 acres, which is about its low-water area; 200 acres being its high-water area.

## 1870.

Rain-fall July 2 to November 21, 1870, was 9.91 inches; 9.91 inches on 1,000 acres equals 19.82 on 200 acres at $\frac{4}{10}$.

| | |
|---|---|
| Gain in pond by rain-fall, 19.82 inches . . . . | 99,100,000 |
| Fall in pond in same time 30.40 inches . . . . | 152,000,000 |
| Making total supply from this source . . . . . | 251,100,000 |
| Amount pumped during same time . . . . . | 268,752,292 |
| Difference . . . . . | 17,652,292 |

Showing that we pumped 17,652,292 gallons more than is accounted for above; but as this amount only represents about $3\frac{1}{2}$ inches on the pond, we think that, as when we began to pump, July 2, the pond was $30\frac{2}{5}$ inches higher than on November 21, when we left off, all this can be accounted for by the larger area of the pond at that time.

1871.

Rain-fall July 2d to November 21, 1871, was 15.72 inches. 15.72 inches on 1,000 acres equals 31.44 on 200 acres at $\frac{4}{10}$.

| | |
|---|---|
| Gain in pond by rain-fall, 31.44 inches . . . . | 157,200,000 |
| Fall in pond in same time, 15.75 inches . . . . | 78,750,000 |
| Making total supply from this source . . . . | 235,950,000 |
| Amount pumped during same time . . . . . | 236,313,200 |
| Difference . . . . . | 363,200 |

These statements, made up, as we believe, on a correct basis, and confirming each other as they do, would seem to show almost conclusively that so far as we have pumped from the pond, there is no evidence that there is any unseen source of water supply connected with it; and that the belief of some to the contrary, which belief our calculations of last year seemed to prove, is really without any tangible basis to rest upon.

We would here state that from recent observations it appears that we do not pump as much as three hundred and twenty gallons per revolution, in which case it would be shown that the pond has not furnished as much water as is claimed by the rain-fall in these calculations. On the other hand, we have been informed that observations have been made at the pond in the winter, when, in addition to our pumping, large quantities of ice were removed daily, and no corresponding fall in the pond was noticed. We propose, during the coming year, to make such observations and experiments in regard to these matters as will enable us to present the whole subject to you in a more intelligible and reliable manner.

The result so far, we think, shows that we ought not to depend upon getting from Fresh Pond any more water than the natural deposit from rain-fall, and increases the necessity of our retaining all we can of that means of supply.

Our next sources of supply are Little and Spy Ponds. The water in these ponds, in certain seasons of the year, and when it is most needed for use, passes through a process of fermentation, which at that time makes it unsuitable for domestic use without filtering; still, during nine or ten months of the year the water is sweet and good. We think a pipe should be laid at

once connecting the three ponds, so that the water in the other ponds can be used when it is good, to reinforce Fresh Pond ; and when it is bad, can be shut out by a gate in the pipe.

We find there are other small sources of water supply in Middlesex County, which might be of great use to us if we could secure them. In view of the foregoing, and also to provide for the prospective wants of our rapidly growing city, we recommend the City Council to make application to the Legislature as follows : —

*First.* For leave to raise the ponds above high-water mark, and shut out the fish.

*Second.* That we be permitted to take the water from such streams in this county (the right of which is not already granted to others) as we can bring to advantage to reinforce our present water supply.

*Third.* That we be permitted to increase the amount of Water Bonds, for the extension of the Water Works to $1,500,000.

During the past year great efforts have been made by our Superintendent, as well as by special examinations, to detect leaks in the pipes, and prevent unnecessary waste of water. The fact that while there has been a considerable increase in the number of water takers during the past year, the amount of water pumped has not increased, is proof that the labor has not been in vain. It is, however, our conviction that we have reached the minimum amount of water to supply the city, and that we must provide for a constantly increasing demand in the future.

This Board are of the opinion that the "Sinking Fund" does not show in accordance with the law in reference to the same, and we would recommend that the City Council appoint a committee to examine the same ; and suggest that the committee consist of the City Treasurer, the City Auditor, with any others that the Water Board may appoint from their number for this purpose.

We would also respectfully recommend the City Council so to amend the Water Ordinance, that the Sinking Fund of the Water Works may be made up to November 30th each year, at the same time that all other city accounts are made up ; and also to change the time for collecting the water rates from July to Jan-

uary, after which the Sinking Fund will show as nearly as practicable the actual standing of the Water Works at the end of each year.

It has been the rule of the Board to lay main pipes in the streets of the city wherever the water rates subscribed would warrant an income to pay interest on the outlay. Under this rule, about seven miles per year have been laid in each of the three last years. The total length of main pipe in the city is now about sixty-seven miles, and there remain about fifteen miles yet to be piped. The whole subject of piping the streets is in the hands of a committee, and early in the next year we propose to present to the City Council an estimate for this purpose for the ensuing year.

The Board have contracted with Mr. H. R. Worthington, of New York City, for the construction of a new duplex pumping engine of the best construction, the same to be finished and set up in working order by the 1st of September, 1872.

In closing our Report, we wish to refer to a matter that does not come under our especial charge, — a plan by which we think the condition of the pond might be greatly improved. We mean the construction of a road around the borders of our beautiful lake.

There is a constantly increasing demand upon us to provide for the drainage from the estates bordering on the pond, which now pollutes the water. The construction of a sewer in connection with such a road, would carry all the drainage into Alewife Brook, below the outlet of the pond. This, with the clearing up of the banks between such a road and the borders of the pond, would do much towards keeping the water clean and pure. The parties who own the land abutting on the pond, are largely engaged in cutting and storing ice, and it is for their interest to increase the purity of the water and the area of the pond by clearing out the vegetable matter therein. We have reason to believe they would join in this great improvement.

The greatly enhanced value of the four or five hundred acres of land that would thus be rendered a most attractive locality for building purposes, would make it an object alike to the city, the town of Belmont, and the land-owners, to spend the money

required for this purpose, aside from the benefit it would be to our natural reservoir.

All which is respectfully submitted,

J. WARREN MERRILL,
H. R. HARDING,
JOSEPH H. CONVERSE,
GEORGE P. CARTER,
HENRY L. EUSTIS,
CHESTER W. KINGSLEY,
SAMUEL SLOCOMB,
} *Cambridge Water Board.*

*December* 13, 1871.

# REPORT

OF

# THE WATER REGISTRAR.

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WATER REGISTRAR'S OFFICE,
CAMBRIDGE, *December* 1, 1871.

*To the Cambridge Water Board:—*

GENTLEMEN, — In accordance with the provisions of the ordidance for the care and management of the Cambridge Water Works, I hereby respectfully submit my report for the year ending November 30, 1871.

## Receipts.

| | |
|---|---|
| Water rates . . . . . | $111,782.65 |
| Supply account for service pipe, laying, repairing, shutting off and letting on water . . . . . | 15,750.85 |
| Total cash receipts from all sources . . . . . | $127,533.50 |

All of which has been paid into the City Treasury.

| | |
|---|---|
| The increased amount of income for the financial year, over the previous year, is . . . . . | $18,034.54 |

## Expenditures.

The expenditures for the care and management of the Works for the year ending November 30, 1871, have been as follows: —

| | |
|---|---|
| For care and repairs . . . . . | $8,247.00 |
| For pumping service . . . . . | 8,819.88 |
| For office expenses . . . . . | 4,121.79 |
| Total amount . . . . . | $21,188.67 |
| The expenditures on the extension of the Works for the year ending Nov. 30, 1871, were . . | $56,730.39 |
| The expenditure on supply account was . . . . | 15,342.36 |

### Supply Account.

| | | |
|---|---|---|
| Cash received on above account . . | $15,750.85 | |
| Now due . . . . . | 9,989.76 | |
| | | $25,740.61 |
| There was reported due Dec. 1, 1870 . | $8,511.49 | |
| Since expended . . . . . | 15,342.36 | |
| | | 23,853.85 |
| Balance in favor of account . . . . . | | $1,886.76 |

During the year the water has been turned off for non-payment of rates one hundred and fifty-nine times. Of this number one hundred and fifty-three have been let on, leaving a balance of six still remaining off.

The following table exhibits the yearly revenue received from the sale of Fresh Pond water since the purchase of the Works by the city: —

| | | | | | |
|---|---|---|---|---|---|
| From | April 28, 1865, | to | Dec. 1, 1865 . . . . . | | $32,367.19 |
| " | Dec. 1, 1865, | " | 1866 . . . . . | | 40,073.27 |
| " | " 1866, | " | 1867 . . . . . | | 52,733.62 |
| " | " 1867, | " | 1868 . . . . . | | 63,747.42 |
| " | " 1868, | " | 1869 . . . . . | | 76,149.30 |
| " | " 1869, | " | 1870 . . . . . | | 92,606.95 |
| " | " 1870, | " | 1871 . . . . . | | 111,782.65 |
| | | | | | $469,460.40 |

## STATEMENT

SHOWING THE NUMBER OF FAMILIES, STORES, MANUFACTORIES, ETC., SUPPLIED WITH FRESH POND WATER, DECEMBER 1, 1871.

7,151 Families.
693 Hand Hose.
491 Private Stables.
189 Stores.
75 Stationary Engines.
39 Offices.
32 Boarding-houses.
32 Saloons.

28 Reservoirs.
28 Barber Shops.
26 Meat Markets.
22 School-houses.
18 Soap Manufactories.
16 Bake-houses.
15 Blacksmith Shops.
13 Fish Markets.
13 College Buildings.
12 Greenhouses.
12 Livery Stables.
11 Public Halls.
10 Furniture Manufactories.
10 Cow Pastures.
9 Churches.
9 Machine Shops.
9 Printing Offices.
8 Lumber Wharves.
7 Coal Wharves.
6 Banks.
6 Public Houses.
6 Billiard Halls.
6 Horse Railroad Stables.
5 Club Rooms.
5 Stone Yards.
5 Photograph Rooms.
4 Book Binderies.
4 Glass Works.
4 Fire Engine-houses.
4 Police Stations.
4 Planing Mills.
4 Cigar Manufactories.
4 Post Offices.
4 Slaughter-houses.
4 Iron Foundries.
4 Carriage Manufactories.
3 Cooper Shops.
3 Nurseries.
2 Brush Manufactories.

2 Box Manufactories.
2 Tinware Manufactories.
2 Organ Manufactories.
2 Chemical Works.
2 Cattle Yards.
2 Club Stables.
2 Libraries.
2 Steam Railroad Depots.
2 Marble Works.
2 Bacon Works.
2 Stereotype Foundries.
2 Tallow Factories.
2 Private Schools.
2 I. O. of O. F. Halls.
2 Masonic Halls.
2 City Stables.
1 Almshouse.
1 Brass Foundry.
1 Brewery.
1 Boiler Manufactory.
1 Botanic Garden.
1 Brick Yard.
1 Currier Shop.
1 Color Manufactory.
1 Coffin Manufactory.
1 City Hall.
1 City Wharf.
1 Confectionery Manufactory.
1 Cemetery.
1 Drain Pipe Manufactory.
1 Distillery.
1 G. A. R. Hall.
1 Gas Works.
1 Gymnasium.
1 House of Correction.
1 Laundry.
1 Lead Pipe Works.
1 Lard Works.
1 Museum of Comparative Zoölogy.

1 Oil Factory.
1 Paper Collar Manufactory.
1 Poultry House.
1 Rolling Mill.
1 Riding School.
1 Steam Railroad.
1 State Arsenal.
1 Sausage Manufactory.
1 Sugar Refinery.
1 Swine Yard.
1 Vinegar Factory.

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## STATEMENT

SHOWING THE NUMBER AND KIND OF FIXTURES CONTAINED WITHIN THE PREMISES OF WATER TAKERS IN THE CITY OF CAMBRIDGE, DECEMBER 1, 1871.

8,222 Faucets.
1,810 Wash Bowls.
1,586 Water Closets.
1,038 Bath Tubs.
811 Wash Tubs.
300 Fire Hydrants.
188 Slop Closets.
11 Public Drinking Fountains.
10 Private Fountains.

The total number of meters now in use is 81. They are attached to a variety of establishments, as follows: —

| WHERE ATTACHED. | SIZE OF METERS. | | | | | | |
|---|---|---|---|---|---|---|---|
| | ⅝ inch. | ¾ inch. | 1 inch. | 1½ inch. | 2 inch. | 3 inch. | 4 inch. |
| Bay State Glass Co. | – | – | – | – | 1 | – | – |
| Boston and Lowell Railroad Co. | – | – | 1 | – | 3 | – | 1 |
| Badger & Batchelder | – | – | – | 1 | – | – | – |
| Braman, Shaw, & Co. | – | – | – | 1 | – | – | – |
| Boston Chemical Works | – | – | – | – | 1 | – | – |
| Beal & Hooper | – | – | – | – | 1 | – | – |
| Boston Silver Glass Co. | – | – | – | – | 1 | – | – |
| Boston Rolling Mill | – | – | – | – | 1 | – | – |
| B. P. Clark & Co. | – | – | 1 | – | – | – | – |
| Brazier & Whittemore | – | – | 2 | – | – | – | – |
| Boston Stamping and Manufacturing Co. | – | – | 1 | – | – | – | – |
| Boston Car Wheel Co. | – | 1 | – | – | – | – | – |
| Bay State Color Co. | – | – | – | – | 1 | – | |
| C. L. Jones | – | – | 1 | – | – | | – |
| Cambridge Gas Light Co. | – | – | – | – | – | 1 | – |
| Curtis Davis | – | – | – | 1 | – | | |
| Cambridge Stamping Co. | 1 | 1 | – | – | – | – | |
| Doe & Hunnewell | – | – | – | 1 | – | – | – |
| Day & Collins | – | – | 1 | – | – | – | – |
| Francis Draper & Co. | – | 1 | – | – | – | – | – |
| F. Geldowsky | – | – | – | 1 | – | – | – |
| George G. Page & Co. | – | – | 1 | – | – | – | – |
| George Woods & Co. | – | – | – | 1 | – | – | – |
| House of Correction | – | – | – | – | 1 | – | – |
| H. O. Houghton & Co. | – | – | 1 | – | – | – | – |
| Henry Thayer & Co. | – | – | – | – | 1 | – | – |
| Hancock & Greely | – | 1 | – | – | – | – | – |
| H. M. Clark | – | 1 | – | – | – | – | – |
| Holyoke House | – | – | – | – | 1 | – | – |
| John K. Hodgdon | – | – | – | – | 1 | – | – |
| James McIntosh | – | – | 1 | – | – | – | – |
| John P. Squire & Co. | – | 1 | – | – | 1 | – | – |
| John Wilson & Co. | – | – | 1 | – | – | – | – |
| John Reardon & Sons | – | – | 1 | – | – | – | – |
| J. J. Gray | – | – | 1 | – | – | – | – |
| James C. Davis | – | – | 1 | – | – | – | – |
| James B. Kent | – | – | 1 | – | – | – | – |
| Joseph Boynton | 1 | – | – | – | – | – | – |
| James Lee | – | – | 1 | – | – | – | – |
| Leonard Cox | – | 1 | – | – | – | – | – |
| Little & Brown | – | – | 1 | – | – | – | – |
| Lyman Kinsley & Co. | – | – | – | – | 1 | – | – |
| Mt. Auburn Cemetery | – | – | – | 1 | 1 | – | – |
| Mason & Hamlin | – | – | 1 | – | – | – | – |
| North, Meriam, & Co. | – | – | – | – | 1 | – | – |
| New England Glass Co. | – | – | – | – | 1 | – | – |
| O. S. Bullock | – | – | 1 | – | – | – | – |
| Prospect House | – | – | – | 1 | – | – | – |
| Revere Sugar Refinery | – | – | – | – | 1 | – | – |
| Reversible Collar Co. | – | – | – | – | 1 | – | – |
| Shawmut Iron Works | – | 1 | – | – | – | – | – |
| Sylvester Tower | – | – | 1 | – | – | – | – |
| S. M. Cofran | – | – | – | – | 1 | – | – |
| St. Mary's Church | – | – | – | – | 1 | – | – |
| Thayer Club | – | 1 | – | – | – | – | – |
| T. S. Huckins | – | – | 1 | – | – | – | – |

| WHERE ATTACHED. | SIZE OF METERS. | | | | | | |
|---|---|---|---|---|---|---|---|
| | $\frac{5}{8}$ inch. | $\frac{3}{4}$ inch. | 1 inch. | $1\frac{1}{2}$ inch. | 2 inch. | 3 inch. | 4 inch. |
| Theodore Downing . . . . . | – | – | 1 | – | – | – | – |
| Union Glass Co. . . . . | – | 1 | 2 | – | – | – | – |
| Union Railway Co. . . . . | – | 6 | 2 | 2 | – | – | – |
| Woodbury & Co. . . . . | – | – | – | – | 1 | – | – |
| Welch, Bigelow, & Co. . . . . | – | 1 | – | – | – | – | – |
| Asa Gray . . . . . | – | – | – | 1 | – | – | – |

As required by the ordinance, every building supplied with Fresh Pond water has been visited.

Respectfully submitted,

A. F. FIFIELD,

*Water Registrar.*

# REPORT

CONCERNING

## THE ACCOUNTS OF THE WATER REGISTRAR.

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In Cambridge Water Board,
*December* 13, 1871.

The Committee appointed to examine the accounts of the Water Registrar for the financial year ending November 30, 1871, herewith submit the following

## REPORT:

Your Committee have examined the books and accounts of the Water Registrar, and compared them with the vouchers, and find that the same are correct in all respects.

Respectfully submitted,

S. SLOCOMB,
GEORGE P. CARTER, } *Committee.*

# REPORT

OF THE

# SUPERINTENDENT OF THE WATER WORKS.

---

*To the Water Board of the City of Cambridge: —*

GENTLEMEN, — Having assumed again the duties to which you appointed me, and in conformity with the requirements of the City Ordinance relating to the Water Works, I hereby submit for your consideration the Seventh Annual Report of the condition of the Works under my charge, together with a detailed statement of the work performed under my direction for the year ending November 30, 1871.

## Pond.

In December, 1870, the brook between Spy and Fresh Ponds was thoroughly cleaned out and the flash boards were raised daily to allow the fish to leave the pond. In January, there was a continual flow of water between the two ponds, and the water in Fresh Pond was eight inches above the lowest point of 1870. In February, the water was 11½ inches above the lowest point of 1870. In March, the lower flash boards at the outlet of the two ponds were removed, and the brook, with the upper gates, was placed in charge of the fish officer to meet the requirements of the law. During the month the water in the pond was 33 inches above the lowest point of 1870. In May, 32 inches, and in June 24 inches above the lowest point of 1870. During this month the gate was kept closed in consequence of the high water on the meadows. In July, the water was 14½ inches; in August, 10 inches; in September, 4 inches; in October, 5 inches; and in November 8 inches above the lowest point of 1870, — the latter being 4 feet and 3 inches below the high-water mark as established by the City Engineer. In January, by the direction of

the Board, the 20-inch pipe which formerly conveyed the water from the pond to the old well room was removed, and was sold on the ground to J. J. Walworth & Co. for $539.21, which amount has been paid to the City Treasurer, and carried to the Sinking Fund.

### Engine House.

In December, 1870, 160 loads of stone chips were carted from the Almshouse ledge, and were used in ballasting the bank wall around the engine buildings. The only repairs made upon the old pumps during the year were in February, prior to the laying off of the new pumping engine for repairs, when they were overhauled and repaired at a cost for material of $190.47. On the 8th of March the repairs were made on the new pumping engine by the builder, Mr. H. R. Worthington, at his expense, occupying ten days; the steam jackets, both of which were leaking badly, were patched and made perfectly tight, and the engine has since been on daily duty, working well. In July, a car track was laid from the coal shed to the boiler room, and a hand car has since been used for getting in coal, making quite a material saving in labor. The dwelling-house, which has been vacant more than a year, has been put in repair, and is now occupied by the Engineer. We have at the present time nearly a year's supply of coal on hand. There were 637,912,150 gallons of water pumped the past year, using 1,402,390 pounds of coal. The average number of gallons pumped daily was 1,747,704, — an average daily increase over the previous year of 7,835 gallons, — about 43 gallons daily average for each inhabitant of the city.

### Force Main.

The force main has been in good order. Only two slight leaks at the joints have occurred in it during the year.

### Reservoirs.

The reservoirs are both in a very satisfactory condition, and no repairs of any importance have been made on them during the year. In July, the stand pipe was raised fifteen feet.

The following elevations above the marsh level have been obtained from the City Engineer: —

| | |
|---|---|
| Top of stand pipe | 122.70 feet. |
| Overflow in stand pipe | 120.00 " |
| Reservoir capping | 77.00 " |
| Intersection of Otis and Fourth Streets | 37.31 " |
| Harvard Street, near Dana Street | 45.15 " |
| Highest land in Cambridge | 76.71 " |
| Concord Avenue, near Sparks Street | 57.16 " |
| Highest water known in Fresh Pond | 1.86 " |

### Distribution Pipes.

The total length of pipe in the city is now about sixty-seven miles, and it is in a more satisfactory condition than at any time since the Works were purchased by the city. One hundred and eighty-eight leaks have occurred in pipes as follows: One hundred and ten in joints; eighteen in drive-cocks; fourteen in defective pipes; eight in cement pipes; eight in gates; seven in broken pipes; seven in sleeves; six in hydrants; five in plugs in end of pipe; two in aqueduct logs; one in blow-off; one struck with pick; one in stop-cock in main.

In addition to the new lines of distribution pipes laid the present year, pipes have been removed in several streets, and larger ones laid in their places either because the corrosion of the old pipes had rendered the supply unfit for use, or the smallness of the pipes rendered the supply insufficient for manufacturing purposes and for fire hydrants. Small lines of pipes have also been removed in some streets where larger ones have been laid within a few years, and all the supply pipes on these have been changed. The aqueduct log in Broadway, from Hampshire to Court Street, has been discontinued, and the service pipe attached to the 20-inch main. The 3-inch pipe in Broadway, from Pioneer to Court Street, and the 3-inch pipe in the same street, running 250 feet east and 150 feet west from Davis Street, thus forming two dead ends, has been removed, and all the service pipes connected therewith changed; removing these lines of pipe leaves only the 20-inch main in Broadway east of Winsor Street. In Tremont Street, where we had a line of 4-inch pipe, two hundred and fifty feet of 3-inch pipe have been taken up. Pipes have been removed and larger ones laid as follows: —

Prison Point Street, nine hundred and thirty-four feet of 4-inch pipe taken up, and a 6-inch pipe laid in its place.

Fayette Street, one hundred and thirty-four feet of 3-inch pipe taken up, and a 4-inch pipe laid in its place.

Otis Street, from Third to First Street, eight hundred and twenty-five feet of 4-inch pipe taken up, and a 6-inch pipe laid in its place.

Broadway and Main Street, east of Court Street to Shawmut Iron Works, all the 4 and 3-inch pipes have been taken up and 1,485 feet of 8-inch pipe laid in their place, also one hundred and twenty-six feet of 4-inch pipe in Main Street, west of the junction of Broadway, have been taken up, and a 6-inch pipe laid in its place, thus forming a continuous line of 6-inch pipe in Main Street.

Kirkland Street, from junction of Cambridge Street and Broadway to Baldwin Street, all the 4 and 3-inch pipe has been taken up, and 2,602 feet of 10-inch pipe laid in its place.

In the aggregate, about a lineal mile of pipe.

## Gates.

All the gates have been examined, and are believed to be in good working order. There have been added seventy-three new gates during the year. Quite a large number of these have been placed on old lines of pipe, to divide the distance, which is not only a great benefit to the Works, but a great convenience to the takers, as formerly it was necessary in repairing leaks and connecting new lines of pipes to shut off large sections of the city. Seventy-one gate and hydrant boxes have been raised or lowered to conform to the new grades of streets, and ten decayed boxes have been taken out and replaced by new ones.

## Hydrants.

The hydrants are all in good order throughout the city. Sixty have been added during the year: a large number of these have been placed on old lines of pipe where there was an evident necessity of having them much nearer together on account of the great increase of buildings during the past two years. Twelve hydrants have been raised entire, twelve hydrant boxes have been taken out and replaced by new ones, and nine have been moved on account of widening streets.

## Meters.

Eighteen meters have been applied to the premises of water takers, and five have been removed where parties have discontinued the use of the water, or the rates received were less than prescribed by the ordinance, making the total number now in use eighty-one. Of this number, two are $\frac{5}{8}$-inch; seventeen, $\frac{3}{4}$-inch; twenty-seven, 1-inch; eleven, $1\frac{1}{2}$-inch; twenty-two, 2-inch; one, 3-inch; and one, 4-inch size.

## Drinking Fountains.

One drinking fountain has been placed at the junction of Broadway and Hampshire Street, making the total number eleven. They have been in constant use eight months of the year, and are a great convenience to the public generally.

STATEMENT OF SERVICE PIPE LAID IN 1871.

| Diameter in inches. | Number of Pipes. | Length in Feet. | TOTALS. | |
|---|---|---|---|---|
| | | | Number of Pipes. | Length in Feet. |
| 3 | 1 | 21 | 1 | 21 |
| 2 | 6 | 91 | 6 | 91 |
| $1\frac{1}{2}$ | 2 | 108 | 2 | 108 |
| $1\frac{1}{4}$ | 19 | 376 | 19 | 376 |
| 1 | 60 | 3,222 | 60 | 3,222 |
| $\frac{3}{4}$ | 615 | 35,741 | 615 | 35,741 |
| Aggregate . . . . . | | | 703 | 39,559 |
| The total number of supply pipes is . . . . . | | | | 4,894 |

There have been stopped one hundred and six leaks in service pipe, twenty-five in faucets, fifteen in stop and waste cocks, four in yard hydrants, and three in meters.

## STATEMENT OF LOCATION, SIZE, AND NUMBER OF FEET OF PIPE LAID IN 1871.

| IN WHAT STREET. | Diameter in Inches. | Feet of Pipe. |
|---|---|---|
| Acorn | 4 | 211 |
| Allston | 4 | 658 |
| Allston | 3 | 169 |
| Antrim | 6 | 160 |
| Baldwin | 6 | 281 |
| Baldwin | 4 | 786 |
| Baldwin Court | 1¼ | 190 |
| Baldwin Court | 1½ | 140 |
| Banks | 6 | 275 |
| Banks | 4 | 221 |
| Bay | 4 | 213 |
| Beaver | 4 | 200 |
| Beech | 6 | 47 |
| Bell Court | 4 | 250 |
| Bigelow | 6 | 378 |
| Bolton | 4 | 226 |
| Brattle | 4 | 54 |
| Broadway | 8 | 325 |
| Brookline | 4 | 220 |
| Buckingham | 4 | 216 |
| Cedar | 6 | 631 |
| Chestnut | 4 | 100 |
| Clark | 4 | 634 |
| Cogswell | 3 | 521 |
| Cottage | 4 | 110 |
| Crane | 4 | 42 |
| Dinsmore Place | 1½ | 191 |
| Dover | 4 | 228 |
| Dyke | 4 | 231 |
| Fayette | 4 | 1,344 |
| First | 6 | 250 |
| Flagg | 4 | 189 |
| Flagg Street Court | 3 | 168 |
| Fourth | 4 | 160 |
| Francis Place | 4 | 496 |
| Garden | 6 | 928 |
| Garden Court | 4 | 455 |
| Gore | 4 | 187 |
| Green | 4 | 523 |
| Hancock | 4 | 500 |
| Harrison Avenue | 4 | 102 |
| Harrison Place | 3 | 100 |
| Harvey | 6 | 710 |

STATEMENT OF LOCATION, SIZE, ETC. (*continued*).

| IN WHAT STREET. | Diameter in Inches. | Feet of Pipe. |
|---|---|---|
| Henderson Court | 3 | 275 |
| Highland Avenue | 6 | 418 |
| Highland Avenue | 4 | 25 |
| Holly Avenue | 4 | 306 |
| Houghton | 6 | 36 |
| Hunting | 6 | 700 |
| Hunting | 4 | 6 |
| Kinnaird | 4 | 404 |
| Kirkland | 10 | 2,602 |
| Kirkland | 4 | 100 |
| Kirkland Place | 4 | 540 |
| Lake View Avenue | 6 | 1,120 |
| Langdon | 4 | 357 |
| Lowell | 4 | 54 |
| Lowell Railroad Company | 6 | 918 |
| Lowland Avenue | 4 | 250 |
| Main | 8 | 1,160 |
| Main | 6 | 126 |
| Milk | 6 | 450 |
| Montgomery | 4 | 140 |
| Mount Auburn | 4 | 67 |
| Murdock | 4 | 60 |
| Ninth | 6 | 65 |
| Norfolk | 4 | 50 |
| Norris | 4 | 281 |
| Norton | 4 | 85 |
| North Avenue | 6 | 871 |
| North Avenue | 4 | 25 |
| Orchard | 6 | 330 |
| Otis | 6 | 825 |
| Paper | 6 | 318 |
| Pearl | 4 | 296 |
| Pine | 4 | 85 |
| Prison Point | 6 | 930 |
| Putnam | 4 | 428 |
| Putnam Place | 4 | 108 |
| Reed | 4 | 48 |
| Reed | 6 | 456 |
| Rice | 4 | 540 |
| Rideout | 4 | 415 |
| South (Somerville) | 4 | 184 |
| Spruce | 12 | 2,210 |
| Sumner | 4 | 230 |
| Sidney | 3 | 118 |
| Sidney | 4 | 312 |

STATEMENT OF LOCATION, SIZE, ETC. (*continued*).

| IN WHAT STREET. | Diameter in Inches. | Feet of Pipe. |
|---|---|---|
| Tremont | 4 | 720 |
| Vine | 4 | 250 |
| Walden | 6 | 560 |
| Wallace | 4 | 85 |
| Walnut | 6 | 880 |
| Walnut Avenue | 4 | 80 |
| Washington Avenue | 6 | 236 |
| Waverly | 4 | 280 |
| Westacott Court | 3 | 174 |
| Willow | 4 | 44 |
| Willow (Somerville) | 4 | 213 |
| Willow Place | 4 | 156 |
| Woodbury's Court | 4 | 118 |
| Wright | 4 | 300 |

GATES.

| IN WHAT STREET. | Number. | Diameter in Inches. |
|---|---|---|
| Allston | 1 | 4 |
| Avon | 1 | 4 |
| Baldwin | 1 | 6 |
| Baldwin | 1 | 4 |
| Banks | 1 | 6 |
| Bay | 1 | 4 |
| Broadway | 1 | 8 |
| Brookline | 1 | 4 |
| Cambridge | 2 | 10 |
| Cedar | 1 | 6 |
| Clark | 3 | 4 |
| Cogswell | 1 | 3 |
| Fayette | 1 | 4 |
| First | 1 | 6 |
| Flagg | 1 | 4 |
| Flagg Street Court | 1 | 3 |
| Fourth | 1 | 4 |
| Francis Place | 1 | 4 |
| Garden | 2 | 6 |
| Garden Court | 1 | 4 |
| Green | 1 | 4 |
| Hancock | 2 | 4 |
| Harrison Avenue | 1 | 4 |
| Harvey | 1 | 6 |
| Henderson Court | 1 | 3 |

GATES (*continued*).

| IN WHAT STREET. | Number. | Diameter in Inches. |
|---|---|---|
| Highland Avenue | 1 | 6 |
| Holly Avenue | 1 | 4 |
| Hunting | 1 | 6 |
| Kirkland | 2 | 10 |
| Kirkland Place | 1 | 4 |
| Lake View Avenue | 1 | 6 |
| Langdon | 1 | 4 |
| Lowell Railroad Company | 1 | 6 |
| Lowland Avenue | 1 | 4 |
| Main | 1 | 8 |
| Main | 1 | 6 |
| Milk | 1 | 6 |
| Montgomery | 1 | 3 |
| Norris | 1 | 4 |
| North Avenue | 1 | 4 |
| North Avenue | 1 | 6 |
| Norton | 1 | 4 |
| Otis | 2 | 6 |
| Otis | 1 | 4 |
| Pearl | 1 | 4 |
| Prison Point | 2 | 6 |
| Prison Point | 1 | 4 |
| Prison Point | 1 | 3 |
| Reed | 1 | 6 |
| Rice | 1 | 4 |
| Rideout | 1 | 4 |
| South | 1 | 4 |
| Spruce | 2 | 12 |
| Sumner | 1 | 4 |
| Sidney | 1 | 4 |
| Tremont | 2 | 4 |
| Vine | 1 | 4 |
| Walden | 1 | 6 |
| Walnut | 1 | 6 |
| Ware | 1 | 3 |
| Washington | 1 | 4 |
| Westacott Court | 1 | 4 |
| Willow | 1 | 4 |

## BLOW-OFF PIPES.

| IN WHAT STREET. | Number. | Diameter in Inches. |
|---|---|---|
| Allston | 1 | 1½ |
| Banks | 1 | 1½ |
| Bell Court | 1 | 1½ |
| Cogswell | 1 | 1½ |
| Cottage | 1 | 1½ |
| Flagg | 1 | 1½ |
| Flagg Street Court | 1 | 1½ |
| Francis Place | 1 | 1½ |
| Garden | 2 | 1½ |
| Garden Court | 2 | 1½ |
| Green | 2 | 1½ |
| Harrison Avenue | 1 | 1½ |
| Harrison Place | 1 | 1½ |
| Henderson Court | 1 | 1½ |
| Holly Avenue | 1 | 1½ |
| Kinnaird | 2 | 1½ |
| Lake View Avenue | 1 | 1½ |
| Norris | 1 | 1½ |
| Pearl | 1 | 1½ |
| Sidney | 1 | 1½ |
| Walden | 1 | 1½ |
| Westacott Court | 1 | 1½ |
| Willow | 1 | 1½ |
| Wright | 1 | 1½ |

## RECAPITULATION.

| | |
|---|---|
| 2,210 feet | 12-inch pipe. |
| 2,602 feet | 10-inch pipe. |
| 1,485 feet | 8-inch pipe. |
| 12,207 feet | 6-inch pipe. |
| 16,198 feet | 4-inch pipe. |
| 1,525 feet | 3-inch pipe. |
| 331 feet | 1½-inch pipe. |
| 190 feet | 1¼-inch pipe. |

### Gates.

| | |
|---|---|
| 2 | 12-inch. |
| 4 | 10-inch. |
| 2 | 8-inch. |
| 21 | 6-inch. |
| 38 | 4-inch. |
| 6 | 3-inch. |

### Blow-Off Pipes.

| | |
|---|---|
| 28 | 1½-inch. |

## STATEMENT

### OF STOCK ON HAND EXCLUSIVE OF TOOLS.

20 feet 24-inch pipe.
48 feet 20-inch pipe.
36 feet 16-inch pipe.
300 feet 12-inch pipe.
840 feet 10-inch pipe.
2,500 feet 8-inch pipe.
1,700 feet 6-inch pipe.
1,800 feet 4-inch pipe.
1 24-inch gate.
1 20-inch gate.
1 16-inch gate.
1 12-inch gate.
4 8-inch gates.
3 6-inch gates.
3 3-inch gates.
3 20-inch sleeves.
1 16-inch sleeve.
5 12-inch sleeves.
2 10-inch sleeves.
10 8-inch sleeves.
10 6-inch sleeves.
35 4-inch sleeves.
7 3-inch sleeves.
1 24 × 12-inch T.
2 20 × 12-inch T's.
1 20 × 10-inch T.
2 20 × 4-inch T's.
6 12 × 6-inch T's.
2 10 × 10-inch T's.
2 10 × 6-inch T's.
4 10 × 4-inch T's.
5 8 × 8-inch T's.
2 24-inch sleeves, clamp.
3 12-inch sleeves, clamp.
2 10-inch sleeves, clamp.
3 8-inch sleeves, clamp.
4 4-inch sleeves, clamp.
11 8 × 4-inch T's.
14 6 × 6-inch T's.
4 6 × 4-inch T's.
14 4 × 4-inch T's.
6 3 × 3-inch T's.
1 20 × 6-inch cross.
7 12 × 6-inch crosses.
1 8 × 6-inch cross.
10 8 × 4-inch crosses.
17 6 × 6-inch crosses.
14 4 × 4-inch crosses.
4 12 to 6-inch reducers.
6 10 to 6-inch reducers.
5 8 to 6-inch reducers.
10 6 to 4-inch reducers.
11 4 to 3-inch reducers.
11 10-inch $\frac{1}{8}$-bends.
4 8-inch $\frac{1}{8}$-bends.
7 6-inch $\frac{1}{8}$-bends.
6 6-inch offsets.
2 4-inch offsets.
4 12-inch elbows.
4 gate boxes.
2 gate frames, large.
2 gate frames, small.
2 hydrant boxes.
4 hydrant frames.
1,000 feet burnettized plank.
300 feet dressed boards.
100 loads gravel.
50 pounds old brass.
6 tons old iron.
3 3-inch fire hydrants.

## Meters.

4 2-inch meters.
4 1½-inch meters.
3 1-inch meters.
8 ¾-inch meters.

## Galvanized Pipe.

150 feet 2-inch galvanized pipe.
250 feet 1½-in. galvanized pipe.
180 feet 1¼-in. galvanized pipe.
125 feet 1-in. galvanized pipe.
1,300 feet ¾-in. galvanized pipe.
150 feet ½-in. galvanized pipe.

## For Service Pipe.

32 2-inch couplings.
36 1¾-inch couplings.
30 1½-inch couplings.
12 1-inch couplings.
75 ¾-inch couplings.
9 1½-inch plugs.
12 1¼-inch plugs.
51 1-inch plugs.
12 ¾-inch plugs.
14 2-inch elbows.
15 1½-inch elbow.
12 1¼-inch elbows.
15 1-inch elbows.
74 ¾-inch elbows.
18 1-inch street elbows.
18 ¾-inch street elbows.
17 2-inch nipples.
15 1½-inch nipples.
11 1¼-inch nipples.
54 1-inch nipples.
35 ¾-inch nipples.
4 2-inch unions.
7 1½-inch unions.
8 1¼-inch unions.
8 1-inch unions.
7 ¾-inch unions.
24 1-inch lock nuts.
10 ¾-inch lock nuts.
250 socket ends.
5 garden hydrants.
12 2-inch T's.
14 1½-inch T's.
25 1¼-inch T's.
50 1-inch T's.
20 ¾ × ½-inch T's.
100 ¾-inch T's.
25 ½-inch T's.
6 1½ × ¾-inch crosses.
25 1-inch crosses.
100 ¾-inch clips.
12 2 × 1½-inch bushings.
12 2 × 1¼-inch bushings.
12 2 × 1-inch bushings.
12 1½ × 1¼-inch bushings.
12 1½ × ¾-inch bushings.
12 1¼ × 1-inch bushings.
12 1¼ × ¾-inch bushings.
24 1 × ¾-inch bushings.
24 1 × ½-inch bushings.
12 1-inch screw cocks.
6 ¾-inch screw cocks.
15 ¾-in. stop and waste cocks.
12 1-inch air chambers.
14 ¾-inch air chambers.
17 ½-inch air chamber.
12 ¾-inch hose bibbs.

12 ½-inch hose bibbs.
15 ¾-inch drive cocks.
12 ¾-inch garden hydrants.
25 ¾-inch corporation cocks.
12 ¾-inch solder nipples.
1 barrel cement.
1 barrel pipe clay.

### Tools.

45 picks.
40 shovels.
20 rammers.
7 crow bars.
2 paving hammers.
4 trowels.
4 saws.
4 hand axes.
6 gate wrenches.
5 hydrant wrenches.
6 supply wrenches.
4 blow off wrenches.
1 4-inch monkey wrench.
2 3-inch monkey wrenches.
4 2-inch monkey wrenches.
12 pairs tongs.
4 sledge hammers.
1 drilling machine.
4 hydrant goose-necks.
1 boom derrick, large.
2 derricks, small.
4 tool chests.
2 bench vises.
2 benches.
39 draws for supply fittings.
1 wheelbarrow.
2 sets caulking tools, complete.
7 lump hammers.
4 pipe cutters.
2 set dies, complete.
2 scroll plates.
1 cylinder stove.
1 thawing boiler.
2 thawing pumps.
4 furnaces.
3 ratchets.
8 pairs rubber boots.
1 pair scales.
200 pounds packing.
1½ tons lead.
12 lanterns.
1 horse.
2 harnesses.
3 light wagons.
1 heavy wagon.
3 hand-carts.
1 pung.
1 light sleigh.
1 grindstone.

### At Pond.

2 globe lamps.
3 hand lamps.
3 lanterns.
6 lamp chimneys.
12 lamp wicks.
1 pair lamp shears.
1 bench vise.
1 hand vise.
1 pair pliers.
12 files.
6 file handles.
12 sheets emery cloth.

4 screw wrenches.
12 iron wrenches.
19 socket wrenches.
2 gate wrenches.
3 die plates.
2 sets dies, complete.
2 sets taps.
2 ratchets.
1 breast drill.
1 drill brace.
22 drills.
18 cold chisels.
10 caulking tools.
2 jack screws.
2 steel bars.
2 iron bars.
1 sledge.
1 copper hammer.
2 hand hammers.
2 coal hammers.
1 forge.
1 anvil.
8 pairs tongs.
100 pounds bar iron.
15 pairs pipe tongs.
50 feet pipe.
12 T's.
36 elbows.
40 nipples.
40 couplings.
4 union joints.
3 globe valves.
2 oil cups.
1 soldering iron.
1 pound solder.
30 pounds lead.
3 pounds Babbitt's metal.
2 ladles.
150 pounds bolts and nuts.
5 pounds washers.
12 1 inch bolts.
18 $\frac{5}{8}$ to $1\frac{1}{4}$ inches.
9 eye bolts.
1 air pump link.
1 rotary pump.
24 valve springs.
4 pounds sheet brass.
1 differential block.
1 turn buckle.
1 carpenter's chest.
2 hand planes.
3 hand saws.
1 axe.
1 square.
1 drawing knife.
2 chisels.
8 gouges.
3 bit stocks.
10 bits.
3 screw drivers.
1 grindstone.
6 pounds screws.
50 pounds cut nails.
8 pounds white lead.
10 pounds brown paint.
2 paint brushes.
10 oil cans.
6 gallons kerosene.
$\frac{1}{2}$ gallon lard oil.
140 pounds tallow.
45 sheets rubber.
19 9-inch rubber valves.
9 5-inch rubber valves.
50 $2\frac{1}{2}$-inch rubber valves.
4 36-inch rubber gaskets.
2 pairs rubber boots.
50 pounds jute packing.
2 pounds hemp packing.

70 pounds Martin's packing.
100 feet rubber hose.
10 yards felting.
1 set fire tools.
3 shovels.
1 spade.
3 hoes.
2 rakes.
1 prong hoe.
1 weeder.
1 pitch fork.
1 scythe and snath.
1 iron roller.
3 water pails.
1 sprinkler.
3 brooms.
1 dust brush.
1 window brush.
2 whitewash brushes.
2 tube brushes.
4 ladders.
1 step ladder.
1 rat trap.
1 steam trap.
2 screens.
2 scoop nets.
2 pairs platform scales.
1 coal car.
1 wheelbarrow.
2 desks.
10 chairs.
3 spittoons.
4 mats.
1 set letters.

Respectfully submitted.

S. W. DUDLEY,
*Superintendent.*

# REPORT OF ESTES HOWE,

## STATE COMMISSIONER.

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CAMBRIDGE, *January* 6, 1872.

*To* HON. H. O. HOUGHTON, *Mayor of Cambridge:* —

I HAVE the honor herewith to present a copy of the Report which I have made to His Excellency, the Governor of the Commonwealth, of the results of the observations made under my direction as Commissioner, appointed in pursuance of the provisions of chap. 290 of the Statutes of 1856.

I also transmit a copy of the very valuable and complete Report made to me by J. G. Chase, Esq., City Engineer, embodying the details of the observations upon which the Report is based, together with a very interesting and valuable profile, showing the rise and fall of three ponds in relation to each other.

It is no part of my official duty to add to the above any suggestions of my own; but my early relation to the Water Works has given me more than the common interest of a tax-payer and consumer in all that relates to them. I therefore think I may, without appearing to obtrude officiously, suggest a few ideas that the observations have suggested to me.

*First.* An examination of the profile lines will, I think, naturally suggest the fact that the level of Fresh Pond is very materially affected by the draft made upon it by the pumps.

*Second.* That a very large amount of water flows from Little and Spy Ponds, without being of use to any one.

*Third.* That this may all be utilized by connecting the two last-named ponds with Fresh Pond.

*Fourth.* That this connection should not be by an open ditch, but by a closed conduit.

*Fifth.* That any possibility of a direct flow of surface water from the marsh should be securely guarded against.

*Sixth.* I would suggest, as extremely desirable, the dredging of the shallow part of the pond to such an extent as to prevent the exposure of any mud flats at low water.

If these things be done, I believe the basin in which the three ponds lie will, for many years, afford a sufficient supply of water.

The water of Fresh Pond, except what falls directly upon the surface, all filters through the earth, and appears as springs. The same thing is true of Spy Pond, but Little Pond is on the line of the Waverly Brook, and receives a large portion of its water from that source. An examination of the profile will show how much more rapidly this pond rises and falls than the others. This peculiarity will make it necessary to provide for the diversion of this water from Fresh Pond, when it becomes turbid in consequence of a sudden rise of the brook.

The fact that the surface of Fresh Pond, during the greater part of the period of observation, has been at a point considerably below mean high tide, indicates the necessity of a permanent dam to prevent the reflux of the salt water into the pond.

I am aware that none of these suggestions have the merit of novelty, but they seem to me so important, that I run the risk of seeming tedious, rather than omit any opportunity of giving my testimony upon points that seem to me so important to the future usefulness of the works.

I have the honor to be

Most respectfully yours,

ESTES HOWE.

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CAMBRIDGE, *January* 2, 1872.

*To His Excellency,* WILLIAM CLAFLIN, *Governor of the Commonwealth, and the Honorable Council:* —

The subscriber, having been honored by your Excellency, by and with the advice and consent of the Honorable Council, with the appointment of Commissioner, as provided in section three of chapter two hundred and ninety of the Acts of 1856, immediately afterwards proceeded to qualify by taking the required

oaths of office, and gave written notice to the City Government of Cambridge, and by advertisement in the papers of Cambridge, to all other parties interested, of his appointment, and his intention to proceed at once to perform the duties assigned to him, as follows:

CITY OF CAMBRIDGE.

Notice is hereby given to all parties interested, that upon application of the City of Cambridge, and in pursuance of the provisions of the third section of chapter 290 of the Acts of 1856, the undersigned has been appointed by the Governor and Council, "Commissioner to ascertain the points between which the waters of Fresh, Spy, and Little Ponds, and the brooks which are the outlets of said ponds, rise and fall." Communications may be addressed to the undersigned at Cambridge.

ESTES HOWE.

The statute points out no specific mode of procedure on the part of the Commissioner, but leaves that to his discretion. He might have called witnesses living or laboring near the several ponds, and taken their testimony as to their actual observations from time to time; but this method was obviously open to a conflict of testimony, and to great doubt and uncertainty in its results. He therefore determined upon the method of actual observation, running through a considerable period. This method is certain as far as it goes; and, though liable to error because during the period of observation the water line may never have reached its maximum or its minimum, yet it is certainly established that the true maximum must be at least as great as that observed, and the true minimum as small as that observed.

For the purpose of making these observations, Josiah G. Chase, Esq., Engineer of the City of Cambridge, was employed, and stations were fixed at suitable places on the three ponds, and with properly constituted water gauges marked to feet and hundredths. The base line adopted was the standard usual in this neighborhood, twenty feet below the coping of the dry dock at the Navy Yard in Charlestown. The height of the water was observed daily in the morning at each of the stations, and a careful record kept of the results. The observations began on the 13th of April, 1870, and were continued till the 12th of April, 1871, thus giving a complete year.

During that period the highest water noted in Fresh Pond was April 21st–22d, 1870, when the gauge marked . 16.85
The lowest water noted was Nov. 22d, 1870, when the gauge marked . . . . . 12.44
Showing a range of . . . . . 4.41
between high and low water in Fresh Pond.
In Spy Pond, the highest water noted was coincident, in point of time, with that at Fresh Pond, namely, April 22d, 1870, when the gauge marked . . . . . 16.60
The lowest water observed was Sept. 23d, 24th, and 25th, when the gauge marked . . . . . 15.14
Showing a range of . . . . . 1.46
In Little Pond, the highest water noted was Feb. 21st, 1871, when the gauge marked . . . . . 16.50
The lowest water noted was Nov. 22d, 1870, when the gauge marked . . . . . 14.38
Showing a range of . . . . . 2.12

A comparison of these observations shows, that during the period of observation, Fresh Pond was, at one period, higher than either of the other ponds, namely, .25 of a foot, or exactly three inches higher than Spy Pond; and at the same date, April 22d, 1870, was .40 of a foot, or nearly five inches higher than Little Pond, and .35 of a foot, or more than four inches higher than the highest water in Little Pond.

The statute under which I hold my appointment simply requires me to "ascertain" the points of high and low water, and if the observations noted above contained all the evidence necessary for that purpose, my task would be a simple one; but, for the reason that the period of observation is necessarily limited, I can only say that I have "ascertained" as to high water in the several ponds, that the point is at least as high as these respectively named: —

| | |
|---|---|
| Fresh Pond . . . . . | 16.85 |
| Spy Pond . . . . . | 16.60 |
| Little Pond . . . . . | 16.50 |

And that dams on the outlets of the various ponds retaining the waters to the heights indicated, would not cause any flowage greater than the statute allows.

As to the observed point of low water, it is to be noted that during the whole period of observation, water was flowing from Spy and Little Ponds through their natural outlets, most of the time escaping by Alewife Brook to Mystic River, but, during a short period, being constrained by a dam to flow back into Fresh Pond. The minimum point to which those ponds would fall was obviously controlled by the condition of their outlets, both of which are much obstructed by stones and other foreign matters. I feel, therefore, obliged to report that it has not been practicable to "ascertain" the lowest point to which these ponds might flow.

I have caused stone monuments to be set at Spy and Little Ponds, indicating high water mark. Also a mark cut into the granite facing of the gate to the well of the City Water Works at the Engine House on Fresh Pond, indicates high water, These will be sufficiently permanent for reference, and the low water points may at any time, when definitely settled, be determined by measurement.

I have only to add that continuous observation to this date has not shown any greater height of water than that indicated before.

I have the honor to subscribe myself, with the greatest respect,

Your Excellency's obedient servant,

ESTES HOWE.

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OFFICE OF CITY ENGINEER,
CAMBRIDGE, *September* 25, 1871.

HON. ESTES HOWE: —

DEAR SIR, — Directed by you, in the performance of your duties as Commissioner under the Statute of 1856, chap. 290, to ascertain the relative heights and fluctuations of Fresh Pond Spy Pond, and Little Pond, I have the honor to report: —

Gauges have been established at the three ponds, having a common base which is twenty feet below the coping of the dry dock at Charlestown, and 5.26 feet below mean low water. The heights of water above this base, shown by the readings of the several gauges, have been observed daily for one year, from

April 13, 1870, to April 12, 1871, inclusive, these heights being given in the tables which accompany this report. During the month of October, 1870, additional observations were made, to determine the times and heights of high water at Alewife Brook, where North Avenue crosses the same, and at the outlet of Fresh Pond, the gate being closed to prevent water flowing to or from the pond. A comparison of these data with similar records obtained from the Coast Survey Office of times and heights of tides in Boston Harbor, is also given. And I have prepared a diagram which represents very clearly to the eye the changes and comparative heights of the ponds throughout the year of observation, upon which may be drawn the points settled upon for established heights of high and low water, should they be so determined by you, under the powers conferred upon the Commissioner named in the act referred to.

From an examination of the gauge records, it appears that the highest point reached by water in Fresh Pond was 16.85 on April 21st–22d, 1870. Water in Little Pond on the 21st was .48 below Fresh Pond, and on the 22d .50 lower. Water in Spy Pond was .30 lower than Fresh Pond on the 21st, and .25 lower on the 22d.

Highest water in Spy Pond occurred on April 22d, 1870, being at 16.60.

Highest water in Little Pond occurred February 21st, 1871, being 16.50, at which time the water was .70 lower in Spy Pond and 3.45 feet lower in Fresh Pond.

Lowest point reached in Fresh Pond, 12.44, occurred on the 22d of November, 1870, at which time the water was 2.86 feet higher in Spy Pond, and 1.94 feet higher in Little Pond.

Lowest water in Spy Pond, 15.14, Sept. 23d, 24th, and 25th.

Lowest water in Little Pond, 14.40, Nov. 18th, 21st.

Difference between highest and lowest water in Fresh Pond, 4.41 feet; highest and lowest of Spy Pond, 1.46 feet; highest and lowest of Little Pond, 2.10 feet.

Greatest difference between Fresh and Spy Ponds occurred on the 22d of November, 1870, being 2.86 feet. On the 25th of April, 1870, Fresh Pond was .15 higher than Spy Pond. The nearest approach to the same level again occurred on the 2d of April, 1871, when Fresh Pond was .59 lower than Spy Pond.

Average of the year for Fresh Pond, 14.02. Average of the year for Spy Pond, 15.64. Average of the year for Little Pond, 15.16.

By the observations alluded to, it is shown that, during the month of October, the water in Alewife Brook was constantly above the water in Fresh Pond. The greatest difference was 2.04 feet on Oct. 27th. Without the gate as maintained, a constant stream of deleterious waters would have been received into the pond, putrid from the marshes and accumulations in the stagnant channel of Alewife Brook, as well as salt water thrown back by the tides. A reference to the tide table will also show that the lowest observed tide at outlet of pond during the month of October was higher than the monthly average of the pond from August to February inclusive. That such a gate of separation should be permanently maintained at this point in the brook, to preserve the water supply of Cambridge from needless contamination, is sufficiently evident.

I have also, as directed, set permanent stone monuments at Spy and Little Ponds. The one at Spy Pond is near its outlet to Little Pond, its top indicating extreme high water observed there, and the one at Little Pond being about midway upon its southerly shore, and placed to indicate extreme height of water as observed in said Pond. At Fresh Pond, I have fixed permanently a copper bolt into the northwest granite column of screen room at the Pumping Works, the top of which is placed at the point of extreme high water observed there.

Very respectfully submitted,

J. G. CHASE.

# TABLES

## SHOWING HEIGHT OF WATER IN THE PONDS.

### APRIL, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rain-fall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 13 | – | 5 | 16.44 | – | 5 | 16.10 | – | 5 | 16.00 | Fair. | – |
| 14 | 6 | – | 16.48 | 6 | – | 16.13 | 6 | – | 15.95 | Fair. | – |
| 15 | 6 | – | 16.50 | 6 | – | 16.15 | 6 | – | 15.90 | Fair. | – |
| 16 | 6 | – | 16.50 | 6 | – | 16.15 | 6 | – | 15.85 | Dull. | – |
| 17 | 6 | – | 16.50 | 6 | – | 16.15 | 6 | – | 15.82 | Cloudy. | – |
| 18 | 6 | – | 16.44 | 6 | – | 16.10 | 6 | – | 15.85 | Some rain. | .46 |
| 19 | 6 | – | 16.56 | 6 | – | 16.45 | 6 | – | 15.85 | Heavy rain. | 1.29 |
| 20 | 6 | – | 16.56 | 6 | – | 16.43 | 6 | – | 16.15 | Some rain. | .17 |
| 21 | 6 | – | 16.55 | 6 | – | 16.37 | 6 | – | 16.85 | Dull. | .12 |
| 22 | 6 | – | 16.60 | 6 | – | 16.35 | 6 | – | 16.85 | Dull. | .29 |
| 23 | 5½ | – | 16.55 | – | – | – | 6 | – | 16.80 | Fair. | – |
| 24 | 6½ | – | 16.52 | 6½ | – | 16.19 | 6 | – | 16.72 | Fair. | – |
| 25 | 7 | – | 16.50 | 7 | – | 16.11 | 6 | – | 16.65 | Some rain. | .12 |
| 26 | 6 | – | 16.46 | 6 | – | 16.07 | 6 | – | 15.95 | Fair. | – |
| 27 | 6 | – | 16.41 | 6 | – | 16.00 | 6 | – | 15.91 | Fair. | – |
| 28 | 6 | – | 16.37 | 6 | – | 15.89 | 6 | – | 15.85 | Some rain. | .61 |
| 29 | 6 | – | 16.41 | 6 | – | 15.98 | 6 | – | 15.75 | Fair. | – |
| 30 | 6 | – | 16.36 | 6 | – | 15.94 | 6 | – | 15.70 | Fair. | – |

### MAY, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rain-fall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 1 | 5½ | – | 16.30 | 5½ | – | 15.81 | 6 | – | 15.65 | Fair. | |
| 2 | 6 | – | 16.28 | 6 | – | 15.80 | 6 | – | 15.60 | Fair. | – |
| 3 | 6 | – | 16.26 | 6 | – | 15.76 | 6 | – | 15.55 | Fair. | – |
| 4 | 6 | – | 16.22 | 6 | – | 15.67 | 6 | – | 15.50 | Dull. | – |
| 5 | 6 | – | 16.20 | 6 | – | 15.65 | 6 | | 15.45 | Fair. | – |
| 6 | 6 | – | 16.19 | 6 | – | 15.61 | 6 | – | 15.40 | Fair. | – |
| 7 | 6 | – | 16.16 | 6 | – | 15.56 | 6 | – | 15.35 | Dull. | – |
| 8 | 7½ | – | 16.15 | 7½ | – | 15.56 | 6 | – | 15.35 | Some rain. | – |
| 9 | 6 | – | 16.15 | 6 | – | 15.59 | 6 | – | 15.32 | Rain. | – |
| 10 | 6 | – | 16.12 | 6 | – | 15.58 | 6 | – | 15.35 | Rain storm. | .31 |
| 11 | 6 | – | 16.13 | 6 | – | 15.60 | 6 | – | 15.35 | Rain storm. | .85 |
| 12 | 6 | – | 16.16 | 6 | – | 15.69 | 6 | – | 15.32 | Fair. | – |
| 13 | 6 | – | 16.15 | 6 | – | 15.67 | 6 | – | 15.35 | Fair. | – |
| 14 | 6 | – | 16.12 | 6 | – | 15.65 | 6 | – | 15.32 | Fair. | – |
| 15 | 6 | – | 16.11 | 6 | – | 15.62 | 6 | – | 15.30 | Fair. | – |
| 16 | 6 | – | 16.09 | 6 | – | 15.61 | 6 | – | 15.30 | Fair. | – |
| 17 | 6 | – | 16.07 | 6 | – | 15.60 | 6 | – | 15.30 | Dull. | – |
| 18 | 6 | – | 16.06 | 6 | – | 15.58 | 6 | – | 15.28 | Fair. | – |
| 19 | 6 | – | 16.03 | 6 | – | 15.52 | 6 | – | 15.26 | Fair. | – |
| 20 | 6 | – | 16.01 | 6 | – | 15.50 | 6 | – | 15.24 | Hazy. | – |
| 21 | 6 | – | 16.00 | 6 | – | 15.41 | 6 | – | 15.20 | Some rain. | .08 |
| 22 | 6 | – | 16.00 | 6 | – | 15.32 | 6 | – | 15.15 | Fair. | – |
| 23 | 6 | – | 15.98 | 6 | – | 15.25 | 6 | – | 15.12 | Fair. | – |
| 24 | 6 | – | 15.98 | 6 | – | 15.21 | 6 | – | – | Cloudy. | .02 |
| 25 | 6 | – | 15.96 | 6 | – | 15.21 | – | – | – | Foggy. | .24 |
| 26 | 6 | – | 15.96 | 6 | – | 15.21 | 6 | – | 15.00 | Fair. | – |
| 27 | 6 | – | 15.95 | 6 | – | 15.18 | – | – | – | Cloudy. | – |
| 28 | 6 | – | 15.93 | 6 | – | 15.15 | – | – | – | Rainy. | .47 |
| 29 | 6 | – | 15.95 | 6 | – | 15.20 | – | – | – | Fair. | – |
| 30 | 6 | – | 15.95 | 6 | – | 15.19 | – | – | – | Hazy. | – |
| 31 | 6 | – | 15.94 | 6 | – | 15.19 | – | – | – | Fair. | – |

## JUNE, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | | |
| 1 | 6 | – | 15.93 | 6 | – | 15.17 | – | – | – | Foggy. | – |
| 2 | 6 | – | 15.92 | 6 | – | 15.17 | – | – | – | Fair. | – |
| 3 | 6 | – | 15.91 | 6 | – | 15.15 | – | – | – | Dull. | – |
| 4 | 6 | – | 15.90 | 6 | – | 15.14 | – | – | – | Cloudy. | – |
| 5 | 6 | – | 15.89 | 6 | – | 15.11 | 6 | – | 14.90 | Fair. | – |
| 6 | 6 | – | 15.88 | 6 | – | 15.10 | 6 | – | 14.88 | Dull. | .09 |
| 7 | 6 | – | 15.88 | 6 | – | 15.10 | 6 | – | 14.88 | Foggy. | .16 |
| 8 | 6 | – | 15.88 | 6 | – | 15.11 | 6 | – | 14.85 | Foggy. | .01 |
| 9 | 6 | – | 15.87 | 6 | – | 15.12 | 6 | – | 14.85 | Cloudy. | .01 |
| 10 | 6 | – | 15.86 | 6 | – | 15.12 | 6 | – | 14.88 | Misty. | – |
| 11 | 6 | – | 15.85 | 6 | – | 15.14 | 6 | – | 14.85 | Rain storm. | .33 |
| 12 | 6 | – | 15.86 | 6 | – | 15.15 | 6 | – | 14.85 | Foggy. | .01 |
| 13 | 6 | – | 15.86 | 6 | – | 15.18 | 6 | – | 14.85 | Some rain. | .56 |
| 14 | 6 | – | 15.91 | 6 | – | 15.29 | 6 | – | 14.95 | Some rain. | .06 |
| 15 | 6 | – | 15.92 | 6 | – | 15.33 | 6 | – | 14.95 | Fair. | – |
| 16 | 6 | – | 15.91 | 6 | – | 15.33 | 6 | – | 14.90 | Fair. | – |
| 17 | 6 | – | 15.90 | 6 | – | 15.31 | 6 | – | 14.92 | Fair. | – |
| 18 | 6 | – | 15.90 | 6 | – | 15.31 | 6 | – | 14.92 | Fair. | – |
| 19 | 6 | – | 15.89 | 6 | – | 15.29 | 6 | – | 14.92 | Fair. | – |
| 20 | 6 | – | 15.86 | 6 | – | 15.25 | 6 | – | 14.90 | Some rain. | .49 |
| 21 | 6 | – | 15.95 | 6 | – | 15.34 | 6 | – | 14.98 | Fair. | .50 |
| 22 | 6 | – | 15.91 | 6 | – | 15.31 | 6 | – | 14.95 | Fair. | – |
| 23 | 6 | – | 15.89 | 6 | – | 15.29 | 6 | – | 14.90 | Dull. | – |
| 24 | 6 | – | 15.89 | 6 | – | 15.27 | 6 | – | 14.89 | Fair. | – |
| 25 | 6 | – | 15.88 | 6 | – | 15.25 | 6 | – | 14.88 | Fair. | – |
| 26 | 6 | – | 15.89 | 6 | – | 15.26 | 6 | – | 14.85 | Cloudy. | .11 |
| 27 | 6 | – | 15.89 | 6 | – | 15.26 | 6 | – | 14.85 | Dull. | .17 |
| 28 | 6 | – | 15.88 | 6 | – | 15.25 | 6 | – | 14.88 | Some rain. | .59 |
| 29 | 6 | – | 15.90 | 6 | – | 15.29 | 6 | – | 14.92 | Fair. | – |
| 30 | 6 | – | 15.89 | 6 | – | 15.26 | 6 | – | 14.92 | Rain at night. | .72 |

## JULY, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | | |
| 1 | 6 | – | 15.90 | 6 | – | 15.35 | 6 | – | 14.95 | Fair. | – |
| 2 | 6 | – | 15.87 | 6 | – | 15.31 | 6 | – | 14.90 | Clear. | – |
| 3 | 6 | – | 15.85 | 6 | – | 15.27 | 6 | – | 14.88 | Dull. | .01 |
| 4 | 6 | – | 15.85 | 6 | – | 15.25 | 6 | – | 14.85 | Hazy. | – |
| 5 | 6 | – | 15.82 | 6 | – | 15.25 | 6 | – | 14.85 | Dull. | – |
| 6 | 6 | – | 15.81 | 6 | – | 15.25 | 6 | – | 14.84 | Fair. | – |
| 7 | 6 | – | 15.81 | 6 | – | 15.24 | 6 | – | 14.81 | Cloudy. | – |
| 8 | 6 | – | 15.84 | 6 | – | 15.29 | 6 | – | 14.80 | Some rain. | .86 |
| 9 | 6 | – | 15.90 | 6 | – | 15.35 | 6 | – | 14.90 | Fair. | – |
| 10 | 6 | – | 15.86 | 6 | – | 15.41 | 6 | – | 14.85 | Fair. | – |
| 11 | 6 | – | 15.84 | 6 | – | 15.41 | 6 | – | 14.85 | Some rain. | .12 |
| 12 | 6 | – | 15.82 | 6 | – | 15.40 | 6 | – | 14.85 | Some rain. | .05 |
| 13 | 6 | – | 15.82 | 6 | – | 15.40 | 6 | – | 14.83 | Dull. | – |
| 14 | 6 | – | 15.81 | 6 | – | 15.40 | 6 | – | 14.80 | Fair. | – |
| 15 | 6 | – | 15.79 | 6 | – | 15.39 | 6 | – | 14.75 | Fair. | – |
| 16 | 6 | – | 15.77 | 6 | – | 15.36 | 6 | – | 14.75 | Shower. | .12 |
| 17 | 6 | – | 15.76 | 6 | – | 15.35 | 6 | – | 14.72 | Fair. | – |
| 18 | 6 | – | 15.75 | 6 | – | 15.33 | 6 | – | 14.70 | Hazy. | – |
| 19 | 6 | – | 15.74 | 6 | – | 15.30 | 6 | – | 14.70 | Fair. | – |
| 20 | 6 | – | 15.71 | 6 | – | 15.28 | 6 | – | 14.65 | Dull. | – |
| 21 | 6 | – | 15.70 | 6 | – | 15 25 | 6 | – | 14.65 | Hazy. | – |
| 22 | 6 | – | 15.69 | 6 | – | 15.23 | 6 | – | 14.63 | Fair. | – |
| 23 | 6 | – | 15.68 | 6 | – | 15.19 | 6 | – | 14.60 | Fair. | – |
| 24 | 6 | – | 15.66 | 6 | – | 15.15 | 6 | – | 14.55 | Fair. | – |
| 25 | 6 | – | 15.65 | 6 | – | 15.11 | 6 | – | 14.53 | Fair. | – |
| 26 | 6 | – | 15.64 | 6 | – | 15.09 | 6 | – | 14.50 | Fair. | – |
| 27 | 6 | – | 15.63 | 6 | – | 15.05 | 6 | – | 14.48 | Dull. | – |
| 28 | 6 | – | 15.60 | 6 | – | 15.00 | 6 | – | 14.45 | Hazy. | – |
| 29 | 6 | – | 15.59 | 6 | – | 14.98 | 6 | – | 14.42 | Cloudy. | – |
| 30 | 6 | – | 15.58 | 6 | – | 14.98 | 6 | – | 14.40 | Fair. | – |
| 31 | 6 | – | 15.56 | 6 | – | 14.95 | 6 | – | 14.35 | Fair. | – |

## AUGUST, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 1 | 6 | – | 15.54 | 6 | – | 14.93 | 6 | – | 14.30 | Fair. | – |
| 2 | 6 | – | 15.52 | 6 | – | 14.87 | 6 | – | 14.28 | Fair. | – |
| 3 | 6 | – | 15.50 | 6 | – | 14.85 | 6 | – | 14.25 | Fair. | – |
| 4 | 6 | – | 15.50 | 6 | – | 14.85 | 6 | – | 14.23 | Showers. | .32 |
| 5 | 6 | – | 15.60 | 6 | – | 14.89 | 6 | – | 14.20 | Fair. | – |
| 6 | 6 | – | 15.60 | 6 | – | 14.87 | 6 | – | 14.18 | Fair. | – |
| 7 | 6 | – | 15.57 | 6 | – | 14.80 | 6 | – | 14.15 | Fair. | – |
| 8 | 6 | – | 15.56 | 6 | – | 14.80 | 6 | – | 14.14 | Fair. | – |
| 9 | 6 | – | 15.54 | 6 | – | 14.79 | 6 | – | 14.10 | Fair. | – |
| 10 | 6 | – | 15.53 | 6 | – | 14.75 | 6 | – | 14.09 | Shower. | .78 |
| 11 | 6 | – | 15.58 | 6 | – | 14.79 | 6 | – | 14.10 | Dull. | .05 |
| 12 | 6 | – | 15.58 | 6 | – | 14.79 | 6 | – | 14.10 | Dull. | – |
| 13 | 6 | – | 15.57 | 6 | – | 14.78 | 6 | – | 14.05 | Some rain. | .22 |
| 14 | 6 | – | 15.59 | 6 | – | 14.80 | 6 | – | 14.00 | Fair. | – |
| 15 | 6 | – | 15.57 | 6 | – | 14.78 | 6 | – | 14.02 | Fair. | – |
| 16 | 6 | – | 15.56 | 6 | – | 14.76 | 6 | – | 14.00 | Fair. | – |
| 17 | 6 | – | 15.55 | 6 | – | 14.75 | 6 | – | 13.98 | Fair. | – |
| 18 | 6 | – | 15.53 | 6 | – | 14.74 | 6 | – | 13.95 | Fair. | – |
| 19 | 6 | – | 15.52 | 6 | – | 14.71 | 6 | – | 13.92 | Dull. | – |
| 20 | 6 | – | 15.51 | 6 | – | 14.70 | 6 | – | 13.90 | Showers. | .25 |
| 21 | 6 | – | 15.50 | 6 | – | 14.70 | 6 | – | 13.88 | Fair. | – |
| 22 | 6 | – | 15.48 | 6 | – | 14.72 | 6 | – | 13.85 | Fair. | – |
| 23 | 6 | – | 15.45 | 6 | – | 14.75 | 6 | – | 13.82 | Fair. | – |
| 24 | 6 | – | 15.44 | 6 | – | 14.75 | 6 | – | 13.80 | Fair. | – |
| 25 | 6 | – | 15.43 | 6 | – | 14.75 | 6 | – | 13.78 | Some rain. | .32 |
| 26 | 6 | – | 15 44 | 6 | – | 14.76 | 6 | – | 13.78 | Fair. | – |
| 27 | 6 | – | 15.41 | 6 | – | 14.77 | 6 | – | 13.75 | Fair. | – |
| 28 | 6 | – | 15.38 | 6 | – | 14.79 | 6 | – | 13.70 | Fair. | – |
| 29 | 6 | – | 15.36 | 6 | – | 14.80 | 6 | – | 13.69 | Some rain. | .08 |
| 30 | 6 | – | 15.36 | 6 | – | 14.83 | 6 | – | 13.68 | Cloudy. | – |
| 31 | 6 | – | 15.35 | 6 | – | 14.85 | 6 | – | 13.66 | Fair. | – |

## SEPTEMBER, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 1 | 6 | – | 15.33 | 6 | – | 14.85 | 6 | – | 13.63 | Clear. | – |
| 2 | 6 | – | 15.32 | 6 | – | 14.85 | 6 | – | 13.60 | Cloudy. | – |
| 3 | 6 | – | 15.31 | 6 | – | 14.85 | 6 | – | 13.58 | Foggy. | .08 |
| 4 | 6 | – | 15.31 | 6 | – | 14.85 | 6 | – | 13.55 | Clear. | – |
| 5 | 6 | – | 15.30 | 6 | – | 14.83 | 6 | – | 13.53 | Clear. | – |
| 6 | 6 | – | 15.28 | 6 | – | 14.78 | 6 | – | 13.50 | Fair. | – |
| 7 | 6 | – | 15.25 | 6 | – | 14.75 | 6 | – | 13.46 | Fair. | – |
| 8 | 6 | – | 15 24 | 6 | – | 14.73 | 6 | – | 13.40 | Fair. | – |
| 9 | 6 | – | 15.24 | 6 | – | 14.72 | 6 | – | 13.38 | Hazy. | – |
| 10 | 6 | – | 15.23 | 6 | – | 14.70 | 6 | – | 13.36 | Fair. | – |
| 11 | 6 | – | 15.21 | 6 | – | 14.68 | 6 | – | 13.34 | Fair. | – |
| 12 | 6 | – | 15.21 | 6 | – | 14.68 | 6 | – | 13.31 | Fair. | – |
| 13 | 6 | – | 15.19 | 6 | – | 14.65 | 6 | – | 13.26 | Fair. | – |
| 14 | 6 | – | 15.17 | 6 | – | 14.60 | 6 | – | 13.24 | Fair. | – |
| 15 | 6 | – | 15.17 | 6 | – | 14.60 | 6 | – | 13.21 | Fair. | – |
| 16 | 6 | – | 15.17 | 6 | – | 14.59 | 6 | – | 13.19 | Hazy. | – |
| 17 | 6 | – | 15.18 | 6 | – | 14.58 | 6 | – | 13.16 | Showers. | .13 |
| 18 | 6 | – | 15.18 | 6 | – | 14.56 | 6 | – | 13.15 | Dull. | – |
| 19 | 6 | – | 15.17 | 6 | – | 14.55 | 6 | – | 13.14 | Fair. | – |
| 20 | 6 | – | 15.16 | 6 | – | 14.54 | 6 | – | 13.11 | Fair. | – |
| 21 | 6 | – | 15.15 | 6 | – | 14.53 | 6 | – | 13.08 | Fair. | – |
| 22 | 6 | – | 15.15 | 6 | – | 14.53 | 6 | – | 13.06 | Dull. | – |
| 23 | 6 | – | 15.14 | 6 | – | 14.51 | 6 | – | 13.03 | Fair. | – |
| 24 | 6 | – | 15.14 | 6 | – | 14.49 | 6 | – | 13.01 | Rain. | .04 |
| 25 | 6 | – | 15 14 | 6 | – | 14.49 | 6 | – | 13.05 | Rain. | .63 |
| 26 | 6 | – | 15.22 | 6 | – | 14.57 | 6 | – | 13.02 | Fair. | – |
| 27 | 6 | – | 15.21 | 6 | – | 14.60 | 6 | – | 13.01 | Fair. | – |
| 28 | 6 | – | 15.21 | 6 | – | 14.59 | 6 | – | 12.98 | Fair. | – |
| 29 | 6 | – | 15.21 | 6 | – | 14.59 | 6 | – | 12.96 | Dull. | – |
| 30 | 6 | – | 15.22 | 6 | – | 14.63 | – | – | – | Rain. | .95 |

## OCTOBER, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | | |
| 1 | 6 | – | 15.30 | 6 | – | 14.75 | 6 | – | 13.05 | Rain. | .01 |
| 2 | 6 | – | 15.31 | 6 | – | 14.78 | 6 | – | 13.02 | Fair. | – |
| 3 | 6 | – | 15.31 | 6 | – | 14.78 | 6 | – | 13.01 | Some rain. | .78 |
| 4 | 6 | – | 15.34 | 6 | – | 14.80 | 6 | – | 13.05 | Cloudy. | – |
| 5 | 6 | – | 15.34 | 6 | – | 14.80 | 6 | – | 13.04 | Rain. | .43 |
| 6 | 6 | – | 15.36 | 6 | – | 14.82 | 6 | – | 13.06 | Fair. | – |
| 7 | 6 | – | 15.35 | 6 | – | 14.83 | 6 | – | 13.04 | Fair. | – |
| 8 | 6 | – | 15.34 | 6 | – | 14.81 | 6 | – | 13.02 | Fair. | – |
| 9 | 6 | – | 15.31 | 6 | – | 14.78 | 6 | – | 13.00 | Fair. | – |
| 10 | 6 | – | 15.30 | 6 | – | 14.75 | 6 | – | 12.99 | Fair. | – |
| 11 | 6 | – | 15.30 | 6 | – | 14.75 | 6 | – | 12.96 | Foggy. | – |
| 12 | 6 | – | 15.30 | 6 | – | 14.75 | 6 | – | 12.96 | Some rain. | .25 |
| 13 | 6 | – | 15.33 | 6 | – | 14.75 | 6 | – | 13.00 | Hazy. | – |
| 14 | 6 | – | 15.30 | 6 | – | 14.70 | 6 | – | 12.99 | Fair. | – |
| 15 | 6 | – | 15.30 | 6 | – | 14.68 | 6 | – | 12.96 | Fair. | – |
| 16 | 6 | – | 15 29 | 6 | – | 14.67 | 6 | – | 12.95 | Fair. | – |
| 17 | 6 | – | 15.29 | 6 | – | 14.66 | 6 | – | 12.94 | Fair. | – |
| 18 | 6 | – | 15.28 | 6 | – | 14.66 | 6 | – | 12.94 | Hazy. | – |
| 19 | 6 | – | 15.25 | 6 | – | 14.60 | 6 | – | 12.83 | Fair. | – |
| 20 | 6 | – | 15.25 | 6 | – | 14.58 | 6 | – | 12.80 | Some rain. | 1.49 |
| 21 | 6 | – | 15.38 | 6 | – | 14.70 | 6 | – | 12.92 | Fair. | – |
| 22 | 6 | – | 15.35 | 6 | – | 14.70 | 6 | – | 12.89 | Fair. | – |
| 23 | 6 | – | 15.35 | 6 | – | 14.70 | 6 | – | 12.88 | Fair. | – |
| 24 | 6 | – | 15.33 | 6 | – | 14.68 | 6 | – | 12.86 | Fair. | – |
| 25 | 6 | – | 15.33 | 6 | – | 14.67 | 6 | – | 12.84 | Rain at night. | .17 |
| 26 | 6 | – | 15.34 | 6 | – | 14.69 | 6 | – | 12.84 | Cloudy. | – |
| 27 | 6 | – | 15 35 | 6 | – | 14.70 | 6 | – | 12.81 | Cloudy. | .04 |
| 28 | 6 | – | 15.31 | 6 | – | 14.70 | 6 | – | 12.79 | Fair. | – |
| 29 | 6 | – | 15.31 | 6 | – | 14.70 | 6 | – | 12.76 | Fair. | – |
| 30 | 6 | – | 15.31 | 6 | – | 14.70 | 6 | – | 12.74 | Fair. | – |
| 31 | 6 | – | 15.34 | 6 | – | 14.71 | 6 | – | 12.76 | Heavy rain. | .62 |

## NOVEMBER, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | | |
| 1 | 6 | – | 15.34 | 6 | – | 14.74 | 6 | – | 12.76 | Fair. | – |
| 2 | 6 | – | 15.34 | 6 | – | 14.75 | 6 | – | 12.73 | Fair. | – |
| 3 | 6 | – | 15.33 | 6 | – | 14.74 | 6 | – | 12.71 | Shower. | .30 |
| 4 | 6 | – | 15.34 | 6 | – | 14.75 | 6 | – | 12.73 | Fair. | – |
| 5 | 6 | – | 15.34 | 6 | – | 14.74 | 6 | – | 12.71 | Dull. | .06 |
| 6 | 6 | – | 15.34 | 6 | – | 14.73 | 6 | – | 12.69 | Fair. | – |
| 7 | 6 | – | 15.33 | 6 | – | 14.72 | 6 | – | 12.67 | Fair. | – |
| 8 | 6 | – | 15.32 | 6 | – | 14.70 | 6 | – | 12.65 | Hazy. | – |
| 9 | 6 | – | 15.32 | 6 | – | 14.70 | 6 | – | 12.63 | Some rain. | .32 |
| 10 | 6 | – | 15.35 | 6 | – | 14.74 | 6 | – | 15.65 | Fair. | – |
| 11 | 6 | – | 15.36 | 6 | – | 14.75 | 6 | – | 12.62 | Fair. | |
| 12 | 6 | – | 15.31 | 6 | – | 14.65 | 6 | – | 12.59 | Fair. | |
| 13 | 6 | – | 15.31 | 6 | – | 14.55 | 6 | – | 12.57 | Fair. | |
| 14 | 6 | – | 15.30 | 6 | – | 14.53 | 6 | – | 12.55 | Fair. | – |
| 15 | 6 | – | 15.30 | 6 | – | 14.51 | 8 | – | 12.53 | Dull. | – |
| 16 | 8 | – | 15.30 | 8 | – | 14.50 | 8 | – | 12.51 | Dull. | – |
| 17 | 8 | – | 15.30 | 8 | – | 14.45 | 8 | – | 12.50 | Fair. | – |
| 18 | 8 | – | 15.29 | 8 | – | 14.40 | 8 | – | 12.48 | Rain. | .32 |
| 19 | 8 | – | 15.32 | 8 | – | 14.43 | 8 | – | 12.50 | Fair. | – |
| 20 | 8 | – | 15.32 | 8 | – | 14.43 | 8 | – | 12.49 | Fair. | – |
| 21 | 8 | – | 15.31 | 8 | – | 14.40 | 8 | – | 12.46 | Fair. | – |
| 22 | 8 | – | 15 30 | 8 | – | 14.38 | 8 | – | 12.44 | Rainy. | 1.82 |
| 23 | 8 | – | 15.38 | 8 | – | 14.78 | 8 | – | 12.61 | Foggy. | – |
| 24 | 8 | – | 15 45 | 8 | – | 15.00 | 8 | – | 12.64 | Dull. | – |
| 25 | 8 | – | 15.43 | 8 | – | 14.97 | 8 | – | 12.65 | Fair. | – |
| 26 | 8 | – | 15.46 | 8 | – | 15.00 | 8 | – | 12.70 | Rain. | .62 |
| 27 | 8 | – | 15.46 | 8 | – | 15.05 | 8 | – | 12.73 | Fair. | – |
| 28 | 8 | – | 15.44 | 8 | – | 15 01 | 8 | – | 12.75 | Fair. | – |
| 29 | 8 | – | 15.43 | 8 | – | 14.99 | 8 | – | 12.76 | Foggy. | .01 |
| 30 | 8 | – | 15.40 | 8 | – | 14.90 | 8 | – | 12.76 | Fair. | – |

## DECEMBER, 1870.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rain-fall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 1 | 8 | – | 15.39 | 8 | – | 14.88 | 8 | – | 12.75 | Fair. | – |
| 2 | 8 | – | 15.37 | 8 | – | 14.80 | 8 | – | 12.75 | Fair. | – |
| 3 | 8 | – | 15.37 | 8 | – | 14.78 | 8 | – | 12.74 | Cloudy. | – |
| 4 | 8 | – | 15.37 | 8 | – | 14.77 | 8 | – | 12.73 | Fair. | – |
| 5 | 8 | – | 15.36 | 8 | – | 14.75 | 8 | – | 12.72 | Foggy. | – |
| 6 | 8 | – | 15.35 | 8 | – | 14.73 | 8 | – | 12.72 | Cloudy. | .04 |
| 7 | 8 | – | 15.35 | 8 | – | 14.70 | 8 | – | 12.70 | Fair. | – |
| 8 | 8 | – | 15.34 | 8 | – | 14.67 | 8 | – | 12.70 | Rainy. | .58 |
| 9 | 8 | – | 15.40 | 8 | – | 14.79 | 8 | – | 12.76 | Fair. | – |
| 10 | 8 | – | 15.39 | 8 | – | 14 78 | 8 | – | 12.76 | Fair. | – |
| 11 | 8 | – | 15.35 | 8 | – | 14.78 | 8 | – | 12.76 | Cloudy. | – |
| 12 | 8 | – | 15 35 | 8 | – | 14.78 | 8 | – | 12.76 | Rainy. | – |
| 13 | 8 | – | 15.47 | 8 | – | 15.10 | 8 | – | 12.93 | Rainy. | 1.41 |
| 14 | 8 | – | 15.47 | 8 | – | 15.20 | 8 | – | 13.01 | Cloudy. | – |
| 15 | 8 | – | 15.45 | 8 | – | 15 20 | 8 | – | 13.06 | Fair. | – |
| 16 | 8 | – | 15.45 | 8 | – | 15.20 | 8 | – | 13.07 | Fair. | – |
| 17 | 8 | – | 15.40 | 8 | – | 15.15 | 8 | – | 13.10 | Fair. | – |
| 18 | 8 | – | 15.40 | 8 | – | 15.15 | 8 | – | 13.10 | Fair. | |
| 19 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.12 | Fair. | – |
| 20 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.15 | Cloudy. | .42 |
| 21 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.18 | Fair. | – |
| 22 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.17 | Fair. | – |
| 23 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.16 | Snow. | – |
| 24 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.17 | Fair. | – |
| 25 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.15 | Fair. | |
| 26 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.15 | Cloudy. | – |
| 27 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.15 | Fair. | – |
| 28 | 8 | – | 15.35 | 8 | – | 15.05 | 8 | – | 13.14 | Some snow. | – |
| 29 | 8 | – | 15.37 | 8 | – | 15.00 | 8 | – | 13.14 | Snow. | .18 |
| 30 | 8 | – | 15.38 | 8 | – | 15.00 | 8 | – | 13.13 | Fair. | – |
| 31 | 8 | – | 15.40 | 8 | – | 15.00 | 8 | – | 13.13 | Some snow. | .08 |

## JANUARY, 1871.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rain-fall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 1 | 8 | – | 15.41 | 8 | – | 14.98 | 8 | – | 13.13 | Fair. | – |
| 2 | 8 | – | 15.42 | 8 | – | 14.95 | 8 | – | 13.11 | Cloudy. | – |
| 3 | 8 | – | 15.43 | 8 | – | 14.99 | 8 | – | 13.08 | Fair. | – |
| 4 | 8 | – | 15.43 | 8 | – | 14.91 | 8 | – | 13 07 | Fair. | – |
| 5 | 8 | – | 15.42 | 8 | – | 14.89 | 8 | – | 13.05 | Fair. | – |
| 6 | 8 | – | 15.40 | 8 | – | 14.87 | 8 | – | 13.05 | Some rain. | .22 |
| 7 | 8 | – | 15.42 | 8 | – | 14 86 | 8 | – | 13.05 | Fair. | – |
| 8 | 8 | – | 15.42 | 8 | – | 14.85 | 8 | – | 13.03 | Fair. | – |
| 9 | 8 | – | 15.45 | 8 | – | 14.95 | 8 | – | 13.02 | Cloudy. | – |
| 10 | 8 | – | 15.45 | 8 | – | 14.95 | 6½ | – | 13.00 | Fair. | – |
| 11 | 8 | – | 15.45 | 8 | – | 14.92 | 6½ | – | 12.98 | Fair. | – |
| 12 | 8 | – | 15.43 | 8 | – | 14.90 | 6½ | – | 12.96 | Fair. | – |
| 13 | 8 | – | 15.41 | 8 | – | 14.88 | 6½ | – | 12.93 | Cloudy. | – |
| 14 | 8 | – | 15 40 | 8 | – | 14.88 | 6½ | – | 12.90 | Fair. | – |
| 15 | 8 | – | 15.40 | 8 | – | 14.85 | 6½ | – | 12.88 | Misty. | .04 |
| 16 | 8 | – | 15.45 | 8 | – | 14.90 | 6½ | – | 12.89 | Rainy. | .58 |
| 17 | 8 | – | 15.50 | 8 | – | 14.97 | 6½ | – | 12.99 | Fair. | – |
| 18 | 8 | – | 15.51 | 7¾ | – | 15.09 | 6½ | – | 12.98 | Fair. | – |
| 19 | 7¾ | – | 15.50 | 7¾ | – | 15.08 | 6½ | – | 12.98 | Cloudy. | – |
| 20 | 7¾ | – | 15.50 | 7¾ | – | 15.10 | 6½ | – | 12.98 | Fair. | – |
| 21 | 7¾ | – | 15.52 | 7¾ | – | 15.11 | 6½ | – | 13.00 | Some snow. | .03 |
| 22 | 7¾ | – | 15.52 | 7¾ | – | 15.11 | 6½ | – | 13.02 | Cloudy. | – |
| 23 | 7¾ | – | 15.52 | 7¾ | – | 15.11 | 6½ | – | 13.02 | Fair. | – |
| 24 | 7¾ | – | 15.50 | 7¾ | – | 15.13 | 6½ | – | 13.02 | Snow. | – |
| 25 | 7½ | – | 15.50 | 8 | – | 15.12 | 6½ | – | 13.02 | Fair. | – |
| 26 | 7½ | – | 15.51 | 8 | – | 15.10 | 6½ | – | 12.98 | Some snow. | – |
| 27 | 7½ | – | 15.50 | 8 | – | 15.11 | 6½ | – | 13.00 | Cloudy. | – |
| 28 | 7½ | – | 15.50 | 8 | – | 15.11 | 6½ | – | 12.96 | Fair. | – |
| 29 | 7½ | – | 15.51 | 8 | – | 15.12 | 6½ | – | 12.91 | Snow. | .50 |
| 30 | 7½ | – | 15.52 | 8 | – | 15.14 | 6½ | – | 12.87 | Fair. | – |
| 31 | 7½ | – | 15.52 | 8 | – | 15.16 | 6½ | – | 12.81 | Cloudy. | – |

## FEBRUARY, 1871.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rain-fall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 1 | 7½ | – | 15.50 | 8 | – | 15.19 | 6½ | – | 12.80 | Cloudy. | – |
| 2 | 7½ | – | 15.50 | 8 | – | 15.21 | 6½ | – | 12.81 | Cloudy. | .01 |
| 3 | 7½ | – | 15.48 | 8 | – | 15.20 | 6½ | – | 12.81 | Cloudy. | – |
| 4 | 7½ | – | 15.48 | 8 | – | 15.20 | 6½ | – | 12.79 | Fair. | – |
| 5 | 7½ | – | 15.48 | 8 | – | 15.20 | 6½ | – | 12.75 | Fair. | – |
| 6 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 12.75 | Fair. | – |
| 7 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 12.73 | Fair. | – |
| 8 | 7½ | – | 15.50 | 8 | – | 15.19 | 6½ | – | 12.70 | Some snow. | |
| 9 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 12.70 | Cloudy. | .32 |
| 10 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 12.69 | Fair. | – |
| 11 | 7½ | – | 15.49 | 8 | – | 15.20 | 6½ | – | 12.65 | Fair. | – |
| 12 | 7½ | – | 15.49 | 8 | – | 15.20 | 6½ | – | 12.60 | Snow. | .72 |
| 13 | 7½ | – | 15.49 | 8 | – | 15.20 | 6½ | – | 12.66 | Fair. | – |
| 14 | 7½ | – | 15.49 | 8 | – | 15.20 | 6½ | – | 12.63 | Snow. | .96 |
| 15 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 12.63 | Fair. | – |
| 16 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 12.61 | Fair. | – |
| 17 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 15.58 | Fair. | – |
| 18 | 7½ | – | 15.50 | 8 | – | 15.20 | 6½ | – | 12.55 | Rain. | .42 |
| 19 | 7½ | – | 15.70 | 8 | – | 15.95. | 6½ | – | 12.76 | Fair. | – |
| 20 | 7½ | – | 15.78 | 8 | – | 16.24 | 6½ | – | 12.86 | Fair. | – |
| 21 | 7½ | – | 15.80 | 8 | – | 16.50 | 6½ | – | 13.05 | Cloudy. | – |
| 22 | 7½ | – | 15.90 | 8 | – | 16.00 | 6½ | – | 13.20 | Fair. | – |
| 23 | 7½ | – | 15.92 | 8 | – | 16.04 | 6½ | – | 13.25 | Fair. | – |
| 24 | 7½ | – | 15.95 | 8 | – | 16.05 | 6½ | – | 13.38 | Cloudy. | – |
| 25 | 8 | – | 15.98 | 8 | – | 16.05 | 6½ | – | 13.55 | Fair. | – |
| 26 | 8 | – | 15.98 | 8 | – | 16.08 | 6½ | – | 13.81 | Cloudy. | – |
| 27 | 8 | – | 16.00 | 8 | – | 16.10 | 6½ | – | 13.97 | Rain. | .18 |
| 28 | 8 | – | 16.00 | 8 | – | 16.08 | 6½ | – | 14.05 | Fair. | – |

## MARCH, 1871.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rain-fall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | A.M. | P.M. | Gauge. | | |
| 1 | 8 | – | 16.00 | 8 | – | 16.05 | 8 | – | 14.08 | Some rain. | .04 |
| 2 | 8 | – | 15.90 | 8 | – | 15.50 | 8 | – | 14.10 | Fair. | – |
| 3 | 8 | – | 15.85 | 8 | – | 15.37 | 8 | – | 14.12 | Cloudy. | – |
| 4 | 8 | – | 15.80 | 8 | – | 15.40 | 8 | – | 14.15 | Cloudy. | .06 |
| 5 | 8 | – | 15.78 | 8 | – | 15.35 | 8 | – | 14.15 | Fair. | – |
| 6 | 8 | – | 15.75 | 8 | – | 15.32 | 8 | – | 14.19 | Cloudy. | .08 |
| 7 | 8 | – | 15.73 | 8 | – | 15.30 | 8 | – | 14.21 | Fair. | – |
| 8 | 8 | – | 15.70 | 8 | – | 15.28 | 8 | – | 14.23 | Fair. | – |
| 9 | 8 | – | 15.68 | 8 | – | 15.25 | 8 | – | 14.26 | Cloudy. | – |
| 10 | 8 | – | 15.68 | 8 | – | 15.30 | 8 | – | 14.27 | Some rain. | .20 |
| 11 | 8 | – | 15.68 | 8 | – | 15.30 | 8 | – | 14.36 | Rainy. | .19 |
| 12 | 8 | – | 15.68 | 8 | – | 15.32 | 8 | – | 14.43 | Rainy. | .23 |
| 13 | 8 | – | 15.70 | 8 | – | 15.40 | 8 | – | 14.50 | Cloudy. | – |
| 14 | 8 | – | 15.70 | 8 | – | 15.39 | 8 | – | 14.52 | Fair. | – |
| 15 | 8 | – | 15.60 | 8 | – | 15.30 | 8 | – | 14.54 | Fair. | – |
| 16 | 8 | – | 15.60 | 8 | – | 15.28 | 8 | – | 14.55 | Cloudy. | .12 |
| 17 | 8 | – | 15.60 | 8 | – | 15.25 | 8 | – | 14.55 | Rainy. | .09 |
| 18 | 8 | – | 15.60 | 8 | – | 15.22 | 8 | – | 14.55 | Cloudy. | – |
| 19 | 8 | – | 15.59 | 8 | – | 15.20 | 8 | – | 14.54 | Fair. | – |
| 20 | 8 | – | 15.58 | 8 | – | 15.18 | 8 | – | 14.55 | Fair. | – |
| 21 | 8 | – | 15.62 | 8 | – | 15.21 | 8 | – | 14.60 | Rain. | 2.17 |
| 22 | 8 | – | 15.82 | 8 | – | 15.91 | 8 | – | 14.90 | Cloudy. | .03 |
| 23 | 8 | – | 15.81 | 8 | – | 15.73 | 8 | – | 15.07 | Cloudy. | – |
| 24 | 8 | – | 15.79 | 8 | – | 15.65 | 8 | – | 15.10 | Fair. | – |
| 25 | 8 | – | 15.75 | 8 | – | 15.55 | 8 | – | 15.09 | Fair. | – |
| 26 | 8 | – | 15.73 | 8 | – | 15.43 | 8 | – | 15.08 | Fair. | – |
| 27 | 8 | – | 15.70 | 8 | – | 15.35 | 8 | – | 15.09 | Snow. | .54 |
| 28 | 8 | – | 15.71 | 8 | – | 15.40 | 8 | – | 15.11 | Cloudy. | – |
| 29 | 8 | – | 15.70 | 8 | – | 15.40 | 8 | – | 15.10 | Fair. | – |
| 30 | 8 | – | 15 69 | 8 | – | 15.37 | 8 | – | 15.08 | Cloudy. | – |
| 31 | 8 | – | 15.69 | 8 | – | 15.32 | 8 | – | 15.05 | Fair. | – |

## APRIL, 1871.

| Day of Month. | SPY POND. | | | LITTLE POND. | | | FRESH POND. | | | Weather. | Inches Rain-fall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | A. M. | P. M. | Gauge. | | |
| 1 | 8 | – | 15.65 | 8 | – | 15.25 | 8 | – | 15.04 | Cloudy. | – |
| 2 | 8 | – | 15.64 | 8 | – | 15.23 | 8 | – | 15.05 | Some snow. | .20 |
| 3 | 8 | – | 15.66 | 8 | – | 15.30 | 8 | – | 15.04 | Fair. | – |
| 4 | 8 | – | 15.70 | 8 | – | 15.35 | 8 | – | 15.02 | Cloudy. | .01 |
| 5 | 8 | – | 15.65 | 8 | – | 15.30 | 8 | – | 15.00 | Fair. | – |
| 6 | 8 | – | 15.60 | 8 | – | 15.26 | 8 | – | 14.98 | Fair. | – |
| 7 | 8 | – | 15.59 | 8 | – | 15.25 | 8 | – | 14.96 | Fair. | – |
| 8 | 8 | – | 15.60 | 8 | – | 15.27 | 8 | – | 14.95 | Fair. | – |
| 9 | 8 | – | 15.60 | 8 | – | 15.27 | 8 | – | 14.94 | Cloudy. | – |
| 10 | 8 | – | 15.59 | 8 | – | 15.25 | 8 | – | 14.95 | Fair. | – |
| 11 | 8 | – | 15.59 | 8 | – | 15.21 | 8 | – | 14.93 | Rainy. | .17 |
| 12 | 8 | – | 15.60 | 8 | – | 15.20 | 8 | – | 14.94 | Fair. | – |

## MONTHLY AVERAGE HEIGHTS.

| Month. | Year. | Spy Pond. | Little Pond. | Fresh Pond. |
|---|---|---|---|---|
| April | 1870 | 16.48 | 16.15 | 16.13 |
| May | 1870 | 16.08 | 15.49 | 15.33 |
| June | 1870 | 15.89 | 15.22 | 14.89 |
| July | 1870 | 15.75 | 15.24 | 14.70 |
| August | 1870 | 15.50 | 14.79 | 13.98 |
| September | 1870 | 15.21 | 14.65 | 13.25 |
| October | 1870 | 15.32 | 14.72 | 12.93 |
| November | 1870 | 15.35 | 14.70 | 12.62 |
| December | 1870 | 15.37 | 14.96 | 12.97 |
| January | 1871 | 15.46 | 15.00 | 12.99 |
| February | 1871 | 15.64 | 15.52 | 12.94 |
| March | 1871 | 15.72 | 15.39 | 14.59 |
| April | 1871 | 15.62 | 15.26 | 14.98 |
| Average for the year | – | 15.64 | 15.16 | 14.02 |

## OCTOBER, 1870. HIGH TIDES.

| Day of Month. | Boston Harbor. | | | Brook at North Av. | | | Brook at Fresh P. | | | Fresh Pond. | Brook above Pond. | Tide at Pond later than Tide at Harbor. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A. M. | P. M. | Height. | A. M. | P. M. | Height. | A. M. | P. M. | Height. | | | |
| | h. m. | h. m. | | h. m. | h. m. | | h. m. | h. m. | | | | h. m. |
| 1 | 4 10 | – | 15.22 | – | – | – | 7 31 | – | 14.70 | 13.05 | 1.65 | 3 21 |
| 2 | 5 15 | – | 14.73 | 6 30 | – | 14.87 | 8 23 | – | 14.45 | 13.02 | 1.43 | 3 08 |
| 3 | 6 25 | – | 14.59 | 7 50 | – | 14.80 | 9 40 | – | 14.38 | 13.01 | 1.37 | 3 15 |
| 4 | 7 29 | – | 15.08 | 8 45 | – | 15.18 | 10 39 | – | 14.71 | 13.05 | 1.66 | 3 10 |
| 5 | 8 31 | – | 14.93 | – | – | – | 11 56 | – | 14.56 | 13.04 | 1.52 | 3 25 |
| 6 | 9 35 | – | 15.46 | – | – | – | – | 1 32 | 14.73 | 13.06 | 1.67 | 3 57 |
| 7 | 10 06 | – | 15.41 | – | – | – | – | 1 58 | 14.69 | 13.04 | 1.65 | 3 52 |
| 8 | 11 00 | – | 15.32 | – | 12 20 | 15.16 | – | 2 42 | 14.55 | 13.02 | 1.53 | 3 42 |
| 9 | 11 33 | – | 15.40 | – | 1 00 | 15.21 | – | 3 30 | 14.58 | 13.00 | 1.58 | 3 57 |
| 10 | – | 12 06 | 15.52 | – | 1 45 | 15.25 | – | 4 15 | 14.54 | 12.99 | 1.55 | 4 09 |
| 11 | – | 12 41 | 15.38 | – | 2 20 | 15.20 | – | 4 34 | 14.54 | 12.96 | 1.58 | 3 53 |
| 12 | – | 1 17 | 15.46 | – | 3 00 | 15.33 | – | 5 12 | 14.65 | 12.96 | 1.69 | 3 55 |
| 13 | – | 1 59 | 15.50 | – | 3 40 | 15.25 | – | 6 03 | 14.64 | 13.00 | 1.64 | 4 04 |
| 14 | – | 2 29 | 14.85 | – | 3 50 | 14.82 | – | – | – | 12.99 | 1.39 | – |
| 15 | – | 3 12 | 14.58 | – | 4 27 | 14.60 | – | – | – | 12.96 | 1.04 | – |
| 16 | – | 3 55 | 14.24 | – | 5 10 | 14.45 | – | – | – | 12.95 | 1.01 | – |
| 17 | – | 4 47 | 13.97 | – | 5 50 | 14.22 | – | – | – | 12.94 | .99 | – |
| 18 | 5 39 | – | 13 38 | 6 40 | – | 13.75 | – | – | – | 12.94 | .93 | – |
| 19 | 6 32 | – | 12.76 | 8 00 | – | 13.37 | – | – | – | 12.83 | 1.00 | – |
| 20 | 7 34 | – | 14.69 | 8 48 | – | 14.68 | – | 1 10 | 14.04 | 12.80 | 1.24 | 5 36 |
| 21 | 8 12 | – | 14.32 | 9 20 | – | 14.55 | 11 10 | – | 14.34 | 12.92 | 1.42 | 2 58 |
| 22 | 9 23 | – | 15.48 | 11 00 | – | 15.20 | – | 1 03 | 14.56 | 12.89 | 1.67 | 3 40 |
| 23 | 10 07 | – | 15.24 | 11 45 | – | 14.87 | – | 1 27 | 14.47 | 12.88 | 1.59 | 3 20 |
| 24 | 10 53 | – | 16.20 | – | 1 00 | 15.44 | – | 3 20 | 14.67 | 12.86 | 1.81 | 4 27 |
| 25 | 11 48 | – | 15.28 | – | 1 53 | 15.47 | – | 4 17 | 14.71 | 12.84 | 1.87 | 4 29 |
| 26 | – | 12 41 | 17.72 | – | 3 00 | 15.70 | – | 5 25 | 14.85 | 12.84 | 2.01 | 4 44 |
| 27 | – | 1 30 | 16.58 | – | 3 50 | 15.65 | – | 6 14 | 14.85 | 12.81 | 2.04 | 4 44 |
| 28 | – | 2 17 | 15.99 | – | 4 10 | 15.40 | – | – | – | 12.79 | 1.96 | – |
| 29 | – | 3 07 | 15.59 | – | 4 45 | 15.22 | – | – | – | 12.76 | 1.79 | – |
| 30 | 3 57 | – | 14.27 | – | 5 30 | 14.80 | 8 18 | – | 14.07 | 12.74 | 1.33 | 4 21 |
| 31 | 5 01 | – | 14.80 | 6 00 | – | 14.90 | 8 26 | – | 14.54 | 12.76 | 1.78 | 3 25 |

# REPORT

OF THE

# SCHOOL COMMITTEE FOR 1871.

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The Committee, in common with our whole community, have sustained a severe bereavement in the sudden death of Rev. Dr. Mason, whose conscientious fidelity, manifest in his whole life, made his services to the educational interests of the city invaluable.

Our schools have been conducted, for the most part, successfully, and it is believed that at least as much good work has been accomplished as in any preceding year. It is hardly possible to overestimate the benefit that has resulted from the alterations in the structure of some of our school-houses, by the division of large halls into rooms of the size proper to accommodate the classes of a single teacher. In a very large school-room, with adjacent recitation-rooms, the teacher left in charge is distracted between the labor of instruction and the necessity of preserving order in seats remote from the desk; acoustic difficulties render the class-exercises in the large room much less satisfactory and profitable than they might otherwise be; and the teachers and pupils in the recitation-rooms — often mere closets — feel the debilitating influence of overheated and tainted air, for which the only relief is the hardly less harmful alternative of open windows. It is hoped that a similar change will be made, during the coming year, in the school-houses which yet remain liable to these inconveniences. It is indeed a costly economy, but by no means so costly as the waste of health, time, and labor inseparable from the large rooms.

The discipline of the schools has been maintained, generally to the satisfaction of the Committee, and in no case with serious

difficulty. The present system as to corporal punishment is believed, by some members of the Committee, to be in every respect judicious. The resort to force is so carefully guarded, and is held to so strict a responsibility, that it can only be a last resort; while there are cases in which all other means fail, and the alternative is the dismission of the pupil to vagrancy and ultimate ruin. It is urged, in behalf of this system, that all government must and should rest upon force, but with so many intermediate springs that it should be brought into play only in stress of need. That this necessity can become very rare, is already demonstrated in our schools, in which probably the number of instances of bodily chastisement, during the last year, was considerably less than the number of teachers, perhaps even less than the number of schools. In the opinion of a portion of the Committee, such chastisement, even in these cases, should have been omitted.

As regards the compensation of our teachers, the most generous policy is undoubtedly the wisest. Our present scale of salaries would hardly replace the present teachers of the higher grades by successors of equal merit. With larger rates of payment, and with no higher cost of living, the cities adjacent to ours will have the advantage of us in the choice of teachers. Then, too, as a matter of justice, those who are permanently in our service, and are bestowing the best service that they can render or we demand, may justly claim more than a mere support. But, in point of fact, the principal of one of our Grammar Schools receives a salary which would barely suffice for the frugal maintenance of a small family, and would leave him, after twenty or thirty years of exhausting labor, as poor as when he began. As regards the wages of female teachers, the Committee have no doubt that, in strict equity, the labor of women in any and every department ought to be as adequately paid as labor of like quantity and quality performed by men; but the existing state of things results inevitably from causes beyond our control, the discussion of which is, therefore, aside from our present purpose.

The High School continues to merit the approval and confidence of our community. Its most difficult work is annually tested by the examinations for admission to College. By this

test, the Cambridge High School now stands second to no other school or academy, and has, if two, not more than two other institutions to occupy with it the foremost place. It is believed that, in the Greek especially, the classes in this school are unequaled; and there is not a College in the land that would not be enriched by the services of our teacher in that department. We prize this school, not merely for the positive instruction imparted, but almost equally for its pervading air of liberal culture, for the stimulus evidently given to the best powers and highest aspirations of its pupils, and for its refining and elevating influence on their manners and their social intercourse, — aims which the principal evidently keeps in constant view, and regards as of prime importance in the work of education. Much of the work done in this school is slow, because it is thorough. The rudiments of every branch are carefully studied, and made the basis for accurate attainments and scholarship. This certainly should be the case in the only school in which large numbers of our citizens can give their children the preliminary training for college, or for professions connected with applied science. Parents who can afford to pay for it, can obtain elsewhere for their children, in much shorter time, a more showy, because a superficial education.

The Training School has now reached a period at which its results may be estimated and its influence traced. Nineteen of its pupils are permanent teachers in this city, and fifteen of our teachers have been members of similar schools elsewhere. We would recommend to the sub-committees of the coming year, that they carefully scrutinize the school-work of these specially trained teachers, and ascertain for themselves whether it has a superior value. If they shall find on the part of these teachers a deeper insight into the young mind and the elements of knowledge fitted for it, more prompt and efficient methods of teaching, superior power of attracting attention, awakening interest, and making the school-hours both happy and gainful, the question as to the expediency of sustaining the school will have been answered in the affirmative. It is, indeed, said that there is no reason why teachers, alone of all the professions, should receive their special training at the public expense. Very true, unless they be trained with a specific reference to the needs of our own

schools. But our Primary Schools, at least, will be taught chiefly by persons educated and resident in Cambridge, and if it shall be proved that a year or two in the Training School greatly enhances the value of the services rendered by such persons, then their special training is not an exclusive privilege granted to them, but a service rendered through them to the entire public. We cannot but anticipate from such inquiries answers favorable to the continuance of the school. Our State Normal Schools have for many years been subjected to this test. They passed through a period of opposition, and even obloquy, were assailed by teachers of long standing and high repute, and obtained their position as permanent institutions only by the observation and experience of their renovating and quickening influence wherever their graduates were employed. It would now be as easy to overthrow the common-school system as to abolish the Normal Schools.

There are some considerations which may show the special need of a Training School for those who are to have charge of our Primary Schools. We all very well know how seldom we recur to the elements of a science or a branch of knowledge with which we have become familiar. It is often found that men of superior learning in any one department are, as its teachers, inferior to persons of active mind, a little in advance of their pupils. Lancaster, the founder of the schools bearing his name, was wont to say that the child who knew but three letters was the best teacher of the child who knew none. Now there is no department of instruction so difficult as that which belongs to the Primary School, — no acclivity on the hill of science so hard to climb as the passage from the alphabet to the first reading and spelling lessons. A young lady, fresh from the High School and decked with its honors, may be well qualified to teach the elements of algebra or geometry, which have so recently taxed her reasoning and cognitive powers; but all the processes by which she first became able to read a printed book, and to perform the simplest problems of mental arithmetic, lie for her in the remote background, are at best but vaguely remembered, and even could she recall them, may have been performed under awkward and incompetent direction. The only qualification which she has gained for her office as a teacher is a quick, receptive, and capa-

ble mind. By the action of that mind she must learn to teach. Shall she learn by unguided experiments on classes committed to her charge, victimizing her earlier pupils that she may be of service to their successors? Or shall her first experiments be made under wise and careful guidance, in connection with the thorough analysis of the subjects and processes of instruction, and with examples of successful teaching constantly before her? This last is the method of the Training School. In its own peculiar school-room the exercises consist, in great part, of the minute examination of the first rudiments of knowledge, of the action upon and by the child's mind in imparting and receiving instruction, and of the methods of facilitating and abridging the traditional processes of teaching which, in some respects, might seem to have been specially devised in the interest of stupidity and ignorance. A part of the time of each pupil in the Training School is spent in actual school-work, in one of the three primary school-rooms in the same building, under the direction of the principal, and in concurrence with the well ordered system of the teacher in charge of the room; so that these future teachers gain very valuable experience under conditions in which their lack of skill is supplied by judicious counsel and excellent example close at hand. Then again, their school-work is discussed, analyzed, criticised, in their own school, their defects or mistakes pointed out, and the questions which suggest themselves to each answered for the benefit of all.

It must be remembered that the entire cost of the Training School to the city does not exceed twelve hundred dollars per annum; that for this sum from twenty to twenty-five young ladies — about the number annually required to fill the vacancies — are every year prepared for service in our schools; and that one hundred and fifty children in the Primary Schools in the same building show by their superior proficiency that the Training School is of no little indirect service to the district in which it is located. It should also be borne in mind that the teachers appointed from the Training School receive less than full salaries for the first two years, and that they are found qualified for places for which otherwise teachers who, on the score of previous experience, could demand full salaries would be sought, so that the

actual pecuniary saving to the city considerably exceeds the cost of the School.

The Drawing School has been renewed with good prospect of success and substantial usefulness. But the instruction of adults in this art satisfies neither the present requirements of the law, nor the needs of the community. In most cases, in order to proficiency in drawing, the eye and hand must be trained very early; and systematic instruction in drawing would have the further advantage of utilizing the large amount of else idle time in schools of the lower grades, and thus of elevating their standard of order and discipline. For this purpose we need a teacher of drawing, who shall stand in a relation to the schools of the whole city, similar to that borne by the teacher of music, — superintending the entire department, giving direction and counsel in all that relates to it, to the individual teachers, and, when desirable, taking specific classes, whether of teachers or pupils, under his special charge.

The teacher of singing has, during the last year, so distributed his efficient service, as to mainiain the standard of vocal music in our schools. But with very few skilled leaders, or accomplished musicians among the teachers, it is evident that accuracy of execution can be secured only by the use of an instrument. The Committee have been disappointed in not obtaining from the City Council an appropriation for pianos for the Grammar Schools. In the failure of this request, the next best thing would be the much less expensive purchase for these schools of music-charts, which may be so hung that they can be seen throughout the largest hall or school-room, and which are almost indispensable in the musical teaching or training of a numerous class.

While our schools are sustained for the common and general good, we have, as always, reason to lament that large numbers of the children and youth of our city are cut off in part or wholly from the benefits of the system. We would first refer to the very many children, boys especially, who leave the Grammar Schools before the close of the regular course of instruction. The classes dwindle year by year, till at length very few remain, except those who intend to apply for admission to the High School. The only effectual remedy for this condition of things is in the hands of the parents; but it may be worthy of consid-

eration, whether, if a diploma or certificate similar to that given to graduates of the High School, were given to all who can sustain a creditable examination at the close of the Grammar School course, the hope of deserving this token of honor might not induce many to remain who have no very strong reason for leaving school.

It is believed that many children are employed in various manufacturing establishments in this city, without being sent to school for a portion of the year, as prescribed by the law of the State. It would be well to institute inquiry as to the number of children who would come under this law, and it may be found expedient to establish for this description of pupils, and for others who cannot easily be classed on account of necessarily irregular attendance or deficient ability, a separate and mixed school. Where schools of this kind have been established, they have been attended with the double advantage, of giving to their pupils, not disjointed fragments of a continuous course, but special instruction, adapted to their degree of proficiency, and of relieving the regular schools from the occasional presence of a class of scholars that are always a hindrance and a burden. Should such a school be deemed expedient, it might, perhaps, be well to have it a half-day school, that children who are dependent on their labor for their support might not have their earnings wholly cut off while attending school.

There is, also, we have reason to believe, a large number of unemployed children that never attend school, and these, with hardly an exception, are precocious in vice and crime, and at a very early period become chargeable to the city, at the police court, and in jail. Measures ought to be taken to ascertain the abodes and haunts of these apprentice-criminals, and to compel their attendance at school. If there are yet wanting legal arrangements for this purpose, it is to be hoped that the City Council will not delay to initiate the requisite measures.

Having thus spoken of the subjects which crave immediate attention, your Committee would avail themselves of the opportunity of suggesting certain other topics which may claim consideration with reference to future action.

The present organization of the Grammar Schools is in one respect defective. It imposes too heavy a weight of labor and

responsibility on the principal. He has the charge of from four to six hundred scholars, under from seven to twelve different teachers. All doubtful questions and all serious cases of discipline are brought to him. He must make himself felt as a power in every department. He must take and keep note of the condition of each class, and the quality of each teacher's work. He must also bear a sufficiently active part in the instruction of the school to have his capacity as a teacher recognized both by his pupils and his associates. Then, too, he must so multiply his own presence, and so harmonize and unify the various classes under his charge, that through his agency (for there is no other) they shall constitute, not separate schools, but one school, with a distinct and definite character which it must owe almost wholly to his capacity, skill, and untiring assiduity. We must not be surprised to see our best teachers breaking down under this weight. They might be relieved in part by the appointment of sub-masters, of the same grade of ability, who would thus be in training for vacancies in the head-masterships as they might occur. The sub-master might take, under ordinary circumstances, an important share in the labor of instruction, yet at the same time aid largely in the general superintendence, and assume it entirely in the necessary absence of the principal.

Another subject worthy of consideration is the establishment of a grade of schools below our present Primary Schools. In some cities in New England Infant Schools have for many years formed an essential part of the public-school system. Into these schools children are received as early as they can be taken care of without the presence of a mother or a nurse. They are permitted the free movement of their limbs, are trained in various calisthenic and gymnastic exercises of the easier kind, are taught in simple songs and chants the first lessons of learning, morality, and religion, and receive familiar instruction about common things and the objects around them. Reading on cards and blocks, phonetic spelling, and such arithmetical processes as they can perform by counting their fingers, complete their novitiate, and prepare them for the next higher grade of schools, corresponding to our lowest. This system is of inestimable benefit to the many mothers whose families depend in part or wholly on their labor, and whose infant children, in their necessary absence

from home, are often exposed to neglect or cruel treatment, sometimes to danger. It makes the children themselves happy, fastens good impressions on them at the most impressible age, and renders them more promising subjects for instruction and discipline when they pass into the Primary Schools. It also raises the character of the Primary Schools by virtually establishing for them a standard for admission, and by retaining in the Infant School those who are not yet capable of a higher grade of instruction. Should an experiment of this kind be authorized in any district of the city, we have little doubt that its success would soon lead to the adoption and permanent establishment of this grade of schools as a part of our system.

There can be no doubt that industrial education will gradually be engrafted upon the school system of Massachusetts. Indeed, a beginning has already been made in Boston for the benefit of female pupils, in the placing of needlework among the regular departments of instruction. This plan has been pursued in one of the cities in an adjacent State for many years, with the most beneficent results as regards contentment, cheerfulness, and order in the schools, and with no loss whatever as to the quantity or quality of proper school-work. There are in our schools large numbers of girls belonging to thriftless families, who have at home no opportunity of learning the use of the needle, and to whom instruction in its use, or entire ignorance of the art, may in coming years determine the question of neatness, respectability, and comfort, or sluttishness, squalidness, and misery, perhaps of pure or vicious lives. Here, again, it might be well to have a partial experiment made, — to select, for instance, one of the schools containing a large proportion of this class of girls, and to employ a competent teacher of needlework for one or two afternoons in each week, for a term of three or six months. The result of such a measure would enable the committee to decide intelligently as to the expediency of making a similar arrangement throughout the city.

The tyrannical and exclusive power of various trade unions under different names and pretexts, the restrictions enforced as to the number of apprentices, and the difficulties interposed in the way of learning some of the most common mechanic arts, may not improbably impose upon our School Boards the duty of pro-

viding some mode or measure of industrial training for boys, at least so far as to give them a knowledge of the nature of materials, the use of common tools, and the management of simple machinery, — all which would be needless were the salutary practice of regular apprenticeships still in common use, but which might be of important service in the desultory and precarious ways in which boys are now often obliged to pick up their education as mechanics. This, however, is not proposed as a subject for present action, but as one in which a strong interest is already felt in philanthropic circles, and on which timely reflection will best insure in their due season wise and salutary measures.

It may be asked how room can ever be found for needlework and industrial teaching, when, as the case now is, the full course of the Primary and Grammar Schools gives the scholar no more than an absolutely necessary school education. The answer might be made, in part, that there is a great waste of time and labor in the methods and the subjects of common-school instruction. In nothing is this more manifest than in the essential art of reading, in which a certain routine of instruction is kept up for many years; and yet, on leaving the Grammar School, the boy or girl who has not been conversant with books out of school, can hardly read a paragraph in a newspaper understandingly or intelligibly. There is a vast amount of needless toil over the alphabet and the earliest spelling lessons. The child's feeble understanding is dazed and confounded by first learning certain names of letters, and then by finding that when those letters are put into a word, they have sounds to which their names bear sometimes an obscure relation, sometimes no relation at all. The more thoughtful a child is, the more difficult will it be for him to believe that *see-a-tee* is really equivalent to *cat*, or *dee-o-jee* to *dog*. The orthography of words is, for a long time, learned solely by a strong effort of memory, without the slightest perception of the power of letters. In like manner, the earliest reading lessons are at length read correctly, not because the child has any idea why they should be so read, but because by dint of frequent repetition they are made as familiar to his ear as the nursery rhymes sung by his mother. He may be able, as the school phrase runs, to read fluently the first ten lessons of his

primer; but his teacher will not suffer a curious visitor to ask him to read the eleventh lesson, entirely aware that he will not be able to give a name to the first new word in it. This is the fault, not of the teacher, but of the method. These difficulties are obviated by the phonetic system. In this the sound of the letter is its name, and every elementary sound has a name and a sign. Consequently, the child who has learned the alphabet has learned to read and spell. Does he see two, three, or four letters in a group? All that he has to do is to pronounce those letters rapidly, and he has the word. Is he asked to spell a word? All that he has to do is to pronounce the word slowly, and you have its letters. By this system it is not too much to say that a child can learn in a fortnight to read more fluently and correctly than in two years of daily lessons under the old method. We by no means advocate the phonetic system except for very young children. The conformity of our orthography in general to the sound, which would inevitably carry with it the omission of the silent letters, would obliterate the birth-marks of a very large proportion of our words, would loosen the historical associations of our language with other tongues, and would interpose awkward and annoying lines of demarcation between earlier and later literature. But experience has shown that the scholars who learn to read by the phonetic method, pass without the slightest difficulty into the ordinary mode, nay, that they only show themselves the more prompt in the discrimination of silent letters and different sounds of the same letter, from their having a standard of comparison. It ought also to be borne in mind that in the elementary phonetic reading-books now used in our schools, though not in phonetic books generally, the various sounds are designated, not by the introduction of new letters, but by modifications of the standard letters of the alphabet, and that silent letters are retained, but printed in such a way as to designate their superfluousness. The pupils of the Training School become adepts in this method of teaching, and as fast as the Primary Schools come under their charge, it will be introduced to the exclusion of the former mode. Were it but for this service alone, the Training School ought to be maintained; for the economy of time, toil, and brain represented by this improvement transcends all numerical estimate.

There is reason to doubt whether the present mode of teaching reading in our Grammar Schools is adapted to the present needs of the pupils. There can be no question that it produces the best apparent results at a school examination. It is, moreover, an excellent method for children who read a great deal out of school, who are likely often to read aloud, and to whom all the details that belong to graceful reading are of essential worth. But a large proportion of the pupils of these schools are children who seldom or never read at home, and hardly ever see any books except their school-books. We doubt whether pupils of this sort really learn at school the art of reading sufficiently to practice it to any good purpose after they leave school. A class in a Grammar School reads, in a term of five months, a third or fourth part of a small reading-book. On each of the exercises in this portion, the scholars undergo an elaborate and often repeated drill in accent, emphasis, inflection, punctuation, in the spelling and pronunciation of the individual words, often in defining them by less intelligible words. These pieces are read so frequently, that at length what is called reading is a mere act of memory, and might be as well performed with the eyes closed. The class appears at the examination absolutely faultless; the reading exercise is as perfect as the best specimen of machine-work; and when the next term commences, the same routine begins again, with a new set of pieces, in which, in like manner, the scholars blunder and stumble into perfection. In order to test the actual progress of pupils in the art of reading, it would be well for an examining committee to take into the school-room some new biography, tale, or novel, and see how many of the class could read it understandingly. It would probably be found that some of the best readers in the class would halt at the first long word, and make nonsense of the first somewhat complex sentence; while only those who are conversant with books at home would stand the test.

Here let it be emphatically said again, the fault rests, not with the teachers, but with the system. They but carry out the method prescribed by the very books imposed upon them by the Committee. It is deserving of inquiry whether all our school reading-books, above the grade of primer, are not a nuisance. The pieces they contain are selected only with a partial view to the

receptivity of the children, with a secondary reference to intrinsic literary merits which young scholars are not able to appreciate, and with a very evident design, also, to compliment certain influential American writers who are expected to recommend books to which they are made contributors. The additional matter which accompanies these pieces, consists of a kind of instruction which the teacher ought to be competent to give, which would be of more worth from his lips, and which in his discretion he might adapt in substance and manner to the quality of his class. Is it asked what should be substituted for these reading-books? We would reply, Let a solid portion of the day be given to reading, whenever there is reading. Let the teacher carry into school the most interesting book he can lay his hands on; if it be amusing, all the better. Let each member of the class in turn read, not a single sentence, but a long paragraph, or a page or two; and if there be one who cannot read so that the class can understand him, let the book be passed to the next boy or girl, — if it were an ambitious child, this would not be done the second time, — and let the exercise be continued long enough for the class to have read and heard either an entire sketch, narrative, or tale, or enough of it to have their curiosity on the alert for the next reading. Then let some of the money that would be expended on class reading-books, be spent in subscribing for several copies of the best juvenile magazines, and in furnishing a school library. Let magazines and books be lent freely to the scholars in school hours, on the sole condition that the privilege shall be forfeited if the lessons be not learned. Instead of making all books but school-books contraband, let scholars be encouraged to bring books of their own — if only proper for their reading — to school with them, and let the free use of them be contingent only on their faithful study of the required lessons. Methods of this kind would not only render essential aid in the one department of reading, but they would be felt beneficially in the whole school-work, which would be much more efficiently done, with a saving of from a third to half of the time nominally spent upon it.

There are other departments of school education that sorely need to be reformed. Grammar is taught to very little purpose to children who know no language but their own. The proprie-

ties of speech and writing are never learned by the study of grammar in school. The habit of correct speaking is best acquired by association with persons who use language with accuracy and elegance, and, where this cannot be, conversance with good books is the only remaining resource. Reading an entertaining and well written volume of two hundred duodecimo pages, would teach a child more of practical grammar than he would acquire in six years' study of a text-book.

The departments of geography and history lie equally open to unfavorable criticism. Names and dates that are sure to be forgotten it is useless to learn. In history, the details of obscure and non-decisive battles, the successions of insignificant dynasties, the mere lists of rulers or statesmen of whose character and influence nothing definite is given; in geography, names of places with which the scholar will never have any association whatever, — are of no more worth than old school or college catalogues. If it be a tonic for the memory that is needed, these last would answer fully as well, and would cost less. We would, indeed, have these branches deprived of none of their importance in our schools. On the other hand, we deem them of the very highest magnitude and interest. But we would have history studied in the great march of events, — in the revolutions, and the progress of intellect, civilization, and culture; in the establishment, growth, and decline of the world's great religions; in the lives and influence of illustrious and typical men. And as for geography, we would lay prime stress on the astronomical and physical relations, laws, divisions, and phenomena of our planet, and would have intimately associated with them the names, sites, and peculiarities of empires, kingdoms, and states, of all important towns and cities, and of all regions of earth and bodies of water with which the pupil can, by the remotest probability, be brought into connection in reading, or travelling, or business. For this kind of study, it must be confessed our common school geographies and histories fail to furnish suitable manuals. But there are men capable of writing the books we need, and if the demand be urged loudly enough, it will bring the supply.

While there is a great deal of time wasted in our schools, and while much is studied that need not be studied, instruction with

reference to the objects with which children are in contact every day, and all their days, is almost wholly omitted. In a few of the Primary Schools, especially in those which have been recruited from the Training School, some simple object-lessons are given, and in our Grammar Schools there are teachers who avail themselves of every possible opportunity to impart similar instruction. But it is not contemplated in our system — except very inadequately in the High-school course — to furnish any definite teaching about common things and the surrounding world. This is too large a subject to discuss at the close of a report already longer than usual. We would merely suggest that, if precious time can be saved by shortening the process of learning to read, and by omitting useless branches, there is a whole world — full of objects adapted to awaken and feed curiosity, and demanding, not a life-time, but almost an eternity, to know them well — into the knowledge of which we now hardly begin to initiate the children under our charge, but in which they can be made learners only to their highest benefit and their enduring happiness.

HAMLIN R. HARDING, *Chairman ex officio.*

ANDREW P. PEABODY,
ALEXANDER McKENZIE,
HENRY P. WALCOTT,
KINSLEY TWINING,
JAMES COX,
EDWARD R. COGSWELL,
CHARLES J. McINTIRE,
GEORGE H. MINER,
ANSON P. HOOKER,
JOHN LIVERMORE,
GEORGE R. LEAVITT,
WILLIAM A. MUNROE,
FRANCIS A. FOXCROFT,
PHILIP R. AMMIDON,
ALEXANDER E. R. AGASSIZ,

*School Committee.*

# TABULAR VIEW

OF

# THE PUBLIC SCHOOLS OF CAMBRIDGE,

JANUARY 1, 1872.

| NAME OF SCHOOL. | TEACHERS. | SALARY. | NO. OF SCHOLARS, Jan. 1, 1872. |
|---|---|---|---|
| High School, | Lyman R. Williston | $4,000 | 321 |
| | Wm. F. Bradbury | 2,500 | |
| | John Orne, Jr. | 2,000 | |
| | Theodore P. Adams | 2,000 | |
| | Edward O. Otis | 1,250 | |
| | Mary F. Peirce | 1,000 | |
| | Emma A. Scudder | 800 | |
| | Elizabeth M. Fessenden | 800 | |
| | Hannah Gleason | 800 | |
| | Augusta L. Brigham | 600 | |
| Allston Grammar, | Benjamin W. Roberts | 2,000 | 609 |
| | Lizzie B. Winnett | 700 | |
| | Sarah E. Hearsey | 700 | |
| | Sarah L. Roberts | 700 | |
| | Emma F. King | 700 | |
| | Mary L. Gamwell | 700 | |
| | Isabel E. Billman | 600 | |
| | Lucia E. Whiting | 600 | |
| | Susan H. Ricker | 600 | |
| | Sarah J. Hinckley | 700 | |
| | Mary E. Woodbridge | 700 | |
| | Hattie E. Keith | 700 | |
| | Georgie M. Barbour | 700 | |
| | Emma E. Perkins | 500 | |
| Harvard " | Aaron B. Magoun | 2,000 | 340 |
| | Catherine Richardson | 700 | |
| | H. Augusta Dodge | 700 | |
| | Ada H. Wellington | 700 | |
| | Mary E. Wyeth | 700 | |
| | Lydia S. King | 700 | |
| | Susan F. Athearn | 700 | |
| | Louise D. Bullard | 700 | |
| | Margaret B. Wellington | 700 | |
| Putnam " | Francis Cogswell | 2,000 | 380 |
| | Sarah M. Burnham | 700 | |
| | Anna B. Josselyn | 700 | |
| | Maria E. Spare | 700 | |

TABULAR VIEW OF THE PUBLIC SCHOOLS (*continued*).

| Name of School. | Teachers. | Salary. | No. of Scholars, Jan. 1, 1872. |
|---|---|---|---|
| Putnam Grammar, | Lizzie A. Winward | $700 | |
| | Minnie E. Metcalf | 700 | |
| | Ella R. Grieves | 600 | |
| | Mary H. Chadbourne | 700 | |
| | Sarah C. Carleton | 700 | |
| Shepard " | Daniel B. Wheeler | 2,000 | 352 |
| | Emma M. Taylor | 700 | |
| | Sara J. French | 700 | |
| | Mary C. Cook | 700 | |
| | H. Estelle Varney | 700 | |
| | Sarah A. Rand | 700 | |
| | Julia H. Osgood | 700 | |
| | Henrietta F. Harris | 700 | |
| Thorndike " | Ruel H. Fletcher | 2,000 | 400 |
| | Anna W. Averill | 700 | |
| | Eunice B. Dyer | 700 | |
| | Martha A. Martin | 700 | |
| | Ella W. Clark | 700 | |
| | Ruth H. Faxon | 700 | |
| | Jeanie A. Norris | 700 | |
| | Mary E. Nason | 700 | |
| | Ellen N. Parker | 700 | |
| Washington " | Daniel Mansfield | 2,000 | 465 |
| | Lucy A. Downing | 700 | |
| | Adeline M. Ireson | 700 | |
| | Catherine P. Green | 700 | |
| | Abby M. Webb | 700 | |
| | Mary E. Lord | 700 | |
| | Adelaide A. Keith | 700 | |
| | Adelaide A. Keeler | 700 | |
| | Emma F. Veazie | 700 | |
| | Hattie T. Nealley | 700 | |
| | Emma A. Stowell | 700 | |
| Webster " | Alvah C. Smith | 2,000 | 625 |
| | Eliza K. Brackett | 700 | |
| | Lucille C. Bancroft | 700 | |
| | Eliza D. Fisher | 700 | |
| | Jane Dallinger | 700 | |
| | Helen J. Maiers | 700 | |
| | Louise C. D. Harlow | 700 | |
| | Isabel B. Merrill | 700 | |
| | Gertrude A. Hyde | 700 | |
| | Esther F. Hannum | 700 | |
| | Susan E. Merrill | 700 | |
| | Eliza E. Williams | 700 | |
| | Mary W. Perkins | 700 | |
| Boardman Primary | Mary F. Emerson | 700 | 345 |
| | Mary F. Stewart | 700 | |
| | Mary Agnes Lewis | 700 | |
| | Sarah E. Stewart | 700 | |

TABULAR VIEW OF THE PUBLIC SCHOOLS (*continued*).

| Name of School. | Teachers. | Salary. | No. of Scholars, Jan. 1, 1872. |
|---|---|---|---|
| Boardman Primary | Ada W. Baker | $600 | |
| | Fanny A. Cooke | 700 | |
| | Nettie Sargent | 700 | |
| | Augusta L. Balch | 500 | |
| Bridge " | Elizabeth E. Dallinger | 700 | 82 |
| | Emily C. Dallinger | 700 | |
| City " | Kate D. Richardson | 500 | 25 |
| Dana " | Abby A. Lewis | 700 | 100 |
| | Maria F. Williams | 700 | |
| | Ellen A. Cheney | 500 | |
| Dunster " | Sarah B. Waitt | 700 | 167 |
| | Susan E. Wyeth | 700 | |
| | Mary L. Bullard | 600 | |
| | Mary E. Smallidge | 600 | |
| Felton " | Juliet F. Sumner | 700 | 149 |
| | Martha A. Culver | 700 | |
| | Sarah H. Chase | 600 | |
| Gannett " | Sarah J. A. Davis | 700 | 175 |
| | Lucy C. Wyeth | 700 | |
| | Jeanie L. Richardson | 700 | |
| | Annie F. Harding | 700 | |
| Harvard " | Helen J. Ward | 700 | 53 |
| Holmes " | Marianne M. Webb | 700 | 134 |
| | Eunice W. Field | 700 | |
| | Julia H. Kimball | 700 | |
| Lechmere " | Martha J. Avery | 700 | 123 |
| | Emma R. Knights | 500 | |
| Mason " | M. Lizzie Evans | 700 | 107 |
| | Julia E. Murdock | 700 | |
| Otis " | Abby S. Taylor | 700 | 415 |
| | Lydia A. Whitcher | 700 | |
| | Susan M. Pendexter | 700 | |
| | Martha H. Butler | 700 | |
| | Ellen N. Pike | 700 | |
| | Luvia Goodnow | 700 | |
| | Annie Knapp | 700 | |
| | Emma C. Barrett | 700 | |
| Putnam " | Frances E. Pendexter | 700 | 218 |
| | Harriet A. Butler | 700 | |
| | Carrie F. Noyes | 700 | |
| | Alice J. Winward | 500 | |
| Quincy " | Charlotte E. Jewell | 700 | 90 |
| | Helen E. Morey | 700 | |
| Reed " | Lucy T. Sawyer | 700 | 209 |
| | Evelyn A. Sawyer | 700 | |
| | Martha C. Dickman | 700 | |
| | Elizabeth A. Tower | 600 | |
| Sargent " | Anna M. Harrod | 700 | 184 |
| | Frances J. Harrod | 700 | |
| | Helen M. Kelley | 600 | |
| | Priscilla L. Lothrop | 600 | |

TABULAR VIEW OF THE PUBLIC SCHOOLS (*continued*).

| Name of School. | Teachers. | Salary. | No. of Scholars, Jan. 1, 1872. |
|---|---|---|---|
| Shepard Primary, | Fanny E. M. Dennis | $700 | 131 |
| | Charlotte A. Ewell | 700 | |
| | Adelia Dunham | 600 | |
| Thorndike " | Helen L. Shepard | 700 | 98 |
| | Mary E. Hartwell | 600 | |
| Willard " | Mary A. Tarbell | 700 | 389 |
| | Mary E. Sawyer | 700 | |
| | Anna S. Lamson | 700 | |
| | Susan M. Cochrane | 700 | |
| | Kate M. Lowell | 700 | |
| | Fanny E. Cooke | 700 | |
| | Amelia Wright | 500 | |
| | H. Flora Hannum | 500 | |
| Training School, | Anna C. Sullivan | 1,000 | 154 |
| | Emma F. Monroe | 800 | |
| | M. Etta Arkerson | 600 | |
| | Ella C. Whitney | 600 | |

Teacher of Singing — Nathan Lincoln, $2,000.

## SUMMARY.

| | |
|---|---|
| Number of Pupils in High School | 321 |
| " " " " Grammar Schools | 3,171 |
| " " " " Primary Schools | 3,348 |
| | 6,840 |

### COST OF INSTRUCTION.

| | | | |
|---|---|---|---|
| High School | $15,750 | For each pupil, | $49.06 |
| Grammar Schools | 59,600 | " " " | 18.79 |
| Primary Schools | 48,300 | " " " | 14.42 |
| Music | 2,000 | | |
| | $125,650 | | $18.37 |

| | |
|---|---|
| Number of Pupils belonging to Public Schools, Jan. 1, 1872 | 6,840 |
| " " " " " " " " 1, 1871 | 6,483 |
| Increase during the past year | 357 |
| Increase of pupils, 1860 | 272 |
| " " " 1861 | 172 |
| " " " 1862 | 262 |
| " " " 1863 | 226 |
| " " " 1864 | 200 |
| " " " 1865 | 58 |
| " " " 1866 | 243 |
| " " " 1867 | 286 |
| " " " 1868 | 330 |
| " " " 1869 | 20 |
| " " " 1870 | 296 |
| " " " 1871 | 357 |
| Number of Schools | 28 |
| " " Teachers | 156 |

# REPORT

OF THE

# SUPERINTENDENT OF SCHOOLS.

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*To the School Committee of Cambridge : —*

GENTLEMEN, — I herewith submit my Annual Report as required by your Regulations.

SUMMARY OF STATISTICS FOR THE SCHOOL YEAR ENDING DECEMBER 31, 1871.

### I. Population.

| | |
|---|---|
| Population of the city (estimated) . . . . . | 43,000 |
| Number of children in the city between five and fifteen years of age, May 1, 1871 . . . . | 8,247 |
| Number May 1, 1870 . . . . . | 8,086 |
| Increase for the year . . . . . | 161 |

### II. Schools.

1 High School.
7 Grammar Schools.
20 Primary Schools.
6 Evening Schools.
1 Evening Drawing School.

| | |
|---|---|
| Whole number of Day and Evening Schools . . . . . | 35 |

### III. School-houses.

| | |
|---|---|
| For the High School . . . . . | 1 |
| For the Grammar Schools . . . . . | 7 |
| For the Primary Schools . . . . . | 16 |
| Number of School-houses in process of erection . . . . | 3 |

### IV. Teachers.

| | |
|---|---|
| Number of teachers in High School | 9 |
| Male teachers, 5; female teachers, 4. | |
| Increase for the year | 1 |
| Number of teachers in Grammar Schools | 73 |
| Male teachers, 7; female teachers, 66. | |
| Increase for the year | 6 |
| Number of teachers in Primary Schools | 72 |
| Increase for the year | 3 |
| Number of teachers in Evening Schools | 20 |
| Male teachers, 6; female teachers, 14. | |
| Whole number of teachers in Day Schools, including teacher of Music, and teacher of Drawing in High School | 156 |

### V. Pupils.

| | |
|---|---|
| Average whole number of pupils belonging to the Day Schools during the year | 6,390 |
| Ratio of the average whole number of pupils belonging to the Schools to the population of the city | .15 |
| Ratio of the number of pupils belonging to the Schools to the school population | .775 |
| Average daily attendance of pupils in all the Day Schools | 5,803 |
| Average per cent. of attendance in all the Day Schools | 90.8 |
| Average whole number of pupils belonging to the High School | 300 |
| Average daily attendance in High School | 288 |
| Per cent. of attendance in High School | 95.9 |
| Average whole number of pupils belonging to Grammar Schools | 2,855 |
| Average daily attendance of pupils in Grammar Schools | 2,636 |
| Per cent. of attendance in Grammar Schools | 92.3 |
| Average whole number of pupils belonging to Primary Schools | 3,225 |
| Average daily attendance in Primary Schools | 2,877 |
| Per cent. of attendance in Primary Schools | 89.2 |
| Whole number of pupils belonging to Evening Schools | 384 |
| Average attendance in Evening Schools | 211 |
| Whole number of pupils belonging to Evening Drawing School | 119 |

| | |
|---|---|
| Average attendance in Evening Drawing School | 108 |
| Number of pupils over fifteen years of age in the Day Schools | 456 |
| Number of pupils admitted to Grammar Schools, July, 1871 | 744 |
| Number of pupils graduated from Grammar Schools | 165 |
| Number of pupils admitted to High School | 148 |
| Number of pupils graduated from High School | 30 |
| Whole number of Private Schools | 20 |
| Number of pupils in Private Schools | 630 |

### VI. Finances.

| | |
|---|---|
| Assessed value of real and personal estate, May, 1871 | $46,859,800.00 |
| Total expenditures for the year ending November 30, 1871 | 1,263,417.16 |
| Cost of instruction in the Public Schools | 106,535.77 |
| Care and repairs of school-houses | 30,554.42 |
| Amount expended for new school-houses and alterations | 110,555.21 |
| Incidental expenses for school purposes | 3,255.88 |
| Total expenditures for all school purposes | 250,901.28 |
| Ratio of expenditures for school purposes to the total expenses of the city | .194 |
| Ratio of appropriation for school purposes to the valuation of 1871 | .00535 |

The past year has been one of uniform success in all the grades of our Public Schools. No radical changes have been attempted in any department, but the work has gone steadily forward, testifying at all times to the general excellence of our public-school system, and also giving evidence of a good degree of fidelity and skill on the part of the instructors.

Many changes have occurred in our corps of teachers. Two appointments have been made in the High School, sixteen in the Grammar Schools, and eight in the Primary department; making a total of twenty-six permanent appointments during the year.

In most instances unusual care has been exercised in the selec-

tion of teachers, and hence we may reasonably expect that the schools will not suffer materially by reason of the changes which have occurred, notwithstanding the fact that we have, in many instances, lost most excellent teachers.

By recently making an increase in the salaries of the female teachers, much has been done towards rendering it possible to secure, and to retain, such instructors as we desire to see in our schools. It is a subject for congratulation that the compensation of this portion of our teachers is now such as to render Cambridge a very unpromising field for any school officials who are meditating piratical excursions beyond their own borders. It cannot be doubted that the legislation which has secured this result was eminently wise and judicious; for superior excellence always gravitates towards those places where excellence is best rewarded; and in the long run, the highest salaries will command the highest order of talent. And here I desire to say, — not because it is new, but because it is most emphatically true, — that the favored opportunities for conferring the greatest possible benefit upon the schools in any community are the occasions when teachers are to be appointed to fill existing vacancies; for we do, after all, always come back to the idea that the school will be just what the teacher makes it. Since, then, the selection of each teacher is a matter of so great importance, doubtless every member of your Board will feel that none should be appointed to this responsible work excepting those who can give evidence of fitness for it. We cannot afford to try doubtful experiments. Our salaries are now sufficient to enable us to secure teachers well qualified by training and experience, and such we ought to have.

Before passing to other topics, I deem it fitting to speak of the great loss we have sustained during the year in the death of one of our teachers, Ella F. Webber, of the Holmes Primary. She was a graduate of the High School, and had been, for several years, a teacher in the Primary department. To those who knew her, no words of mine are needed to testify to the rare qualities which she possessed in so eminent a degree. Earnest, enthusiastic, faithful, — I fear too earnest, too enthusiastic, and too self-sacrificing, — she has left the record of a life of singular

excellence and worth. The death of such a teacher is a public loss, for her place cannot easily be filled.

## School-houses.

It is very gratifying to be able to chronicle the improvements which have been made in our school accommodations during the current year. Thanks to the City Council, much has been done towards providing the city with new school-houses that were greatly needed, while, at the same time, most desirable changes have been made in some of the ill-arranged and inconvenient buildings of which we have always had an overplus. The entire amount expended for new school-houses and alterations, was $110,555.21. The sum appropriated for this purpose was $140,000.00, of which $10,000.00 was transferred to other departments, leaving a balance unexpended at the close of the year of $19,444.79. Of the amount expended, the sum of $56,-615.25 was for buildings which were in process of erection at the beginning of the current year; while the balance, $53,939.96, was for new houses and alterations ordered during the year.

It certainly is not a matter of surprise that so large an amount should be expended in a single year for land, new houses, alterations, furniture, and incidentals, since it is not unusual for a single first-class structure to cost even more than this entire sum; but the necessity for appropriations so generous as these have been, will become the more apparent when we consider the limited amount expended during the few years immediately preceding.

The expenditures for new school-houses for the ten years ending November 30, 1870, exclusive of the cost of the High School, were $103,070.76, or an average for each year of $10,307.07. The increase of pupils during the same time was 2,093, a gain of nearly thirty-three per cent.

It becomes readily apparent, then, that the increase in school accommodations, during the time specified, did not keep pace with the rapid increase of pupils; and hence it is fair to say that a portion of the money we are now expending is called for to meet the deficiencies of former years.

In Ward One, both the Washington Grammar School-house and the Dunster Primary have been remodeled during the year;

and this ward has the enviable distinction of being the first to abolish the system of large rooms, — a system that has done so much, and is still doing so much, to injure the efficiency of the schools.

By the changes which have been made in the Washington School-house, many more pupils can be accommodated than formerly; and, in consequence, there are now in the building two vacant rooms, which will be sufficient to provide for the increase of the school for the next few years. The Dunster now becomes a very convenient structure, in which, for the first time in the history of the school, it is fair to expect from teachers and pupils thoroughly good work.

In Ward Two, the Harvard School-house is nearly completed. This is a plain, substantial structure, built with great economy, but at the same time in the most thorough manner; and it is believed that, in all essential respects, it will not be found inferior to many of the more costly buildings recently erected in other cities and towns. It is commodious, well arranged, and well adapted to the purposes for which it is intended. It will be a noteworthy event in the history of this school, when it can be transferred from its present dismal quarters to the pleasant structure so nearly completed.

One year ago it was shown that a crowded condition of the schools existed in Ward Three and Ward Five, and it was urged that a primary school-house should be erected in each of these districts. This suggestion met with the approval of the City Council, and a brick building is now in process of erection in Ward Three, and one of wood in Ward Five.

Both will be completed within a few months. The Willard Primary in Ward Four, a fine brick building, was finished early in the year, and it is now occupied by a large Primary School.

Having thus noticed some of the results accomplished during the current year, it is proper to call attention to the wants still existing. In my last Report, I suggested the propriety of selling the Quincy School-house, and with the proceeds erecting a building in the vicinity of North Avenue. Without dwelling upon statements then made, I can only say that it seems to me undeniably true that better Primary School accommodations are demanded for that large section extending from the Common on the south,

to Porter's Station on the north, and eastward to the Somerville line.

The High School-house, which was supposed to be sufficiently ample to meet the wants of the school for many years, has been crowded since the beginning of the term in September, and some changes in the building seem to be imperatively demanded. But as the attention of the proper Committee of the City Council has already been called to the subject, it is unnecessary to enter into the details at the present time.

It will be remembered that an effort was made a few years since to secure the remodeling of the Allston School-house, but for reasons more or less satisfactory the matter was indefinitely postponed. Since that time, at least three buildings have been remodeled, and the results which have followed have been in the highest degree satisfactory.

By such changes we utilize a large amount of otherwise useless space, and thus secure an additional number of sittings, while at the same time we get rid of the large rooms which are in all respects, so objectionable. I have, then, no hesitation in suggesting the importance of continuing the good work by remodeling two of the Grammar School-houses during the present year, and these two should be the Allston and Webster. They are much alike, — have about the same number of pupils, and each well illustrates the exceedingly faulty system upon which our Grammar School buildings were constructed. In the Allston, for instance, one room contains *two hundred and twenty* pupils, while the rooms in charge of the assistant teachers have from *one hundred* to *one hundred and fifteen* pupils.

The evils which are inseparable from such a system, the wrong it inflicts upon any community which tolerates it, I have endeavored to describe in former reports, and shall not weary you with a repetition of them.

An effort has been made during the past year to secure greater efficiency in the general care of the school-houses. While much has doubtless been gained, still it can be said that the results, in many respects, have been far from satisfactory. Many of the yards need paving, and will always be in an unfit condition until they are paved. In fact, the entire surroundings, the fences, outbuildings, etc., often bear witness to a want of proper care. It

cannot be doubted that the wisest economy demands that needed repairs should always be promptly attended to.

I feel called upon, also, to say that better judgment, and a higher degree of fidelity, on the part of some of the janitors are greatly desired. The schools are frequently interrupted in consequence of the school-rooms not being properly warmed, and, in some of these cases, at least, the fault is not so much with the heating apparatus, as with the irresponsible person having charge of it.

Still, even in this direction, I am sure we see signs of a better order of things, and I feel confident that we shall find that the duties of those to whom I have referred will, hereafter, be more satisfactorily performed.

I desire, in this connection, again to urge the importance of making a thorough examination of the school-houses at the close of the summer term, in order that the necessary repairs may be made during the long vacation.

In concluding this topic, I feel confident that every member of your Board will agree with me in my estimate of the importance of a more efficient care of our school buildings; and that all will feel a good degree of satisfaction in the anticipation of increased appropriations the coming year for this purpose.

## Primary Schools.

The average number of pupils belonging to these schools during the year was 3,180; the average daily attendance was 2,837; the per cent. of the attendance was 89.2.

In looking at the results accomplished in this department, I have no hesitation in saying that the year has been one of marked progress.

In fact, the general condition of the Primary Schools at the present time, compares so favorably with that existing a few years since as to afford a good degree of satisfaction. In the first place, it is apparent that much has been accomplished during the last three or four years towards securing school-houses in which it is possible to have model Primary Schools. Until quite recently, our greatest weakness was that we not only had no graded Primary School in the city, but, worst of all, we had only

one or two school-houses in which it was possible to have a properly graded school.

These schools, at the time referred to, were, for the most part, occupying either halls, vestries, or large rooms in the Grammar School-houses; and to make the evil greater, many of the rooms were very badly crowded. It was justly felt that the first important step must be in the direction of suitable school accommodations; and the members of the different city governments, appreciating the importance of the demands made upon them, have shown commendable generosity in meeting the pressing wants in this Department. The result has been that Primary School-houses have, from time to time, been erected, until, with the completion of those now building, the city will, for the most part, be supplied with suitable structures.

I speak of these results with the highest satisfaction, for in giving to the Primary Schools well-arranged buildings, more has been done to improve their condition than could possibly have been accomplished in any other way.

The changes in the plan of work, and in the character of the instruction, have also been very marked. But changes are not always improvements, and hence it is desirable to know what we have gained by discarding the old methods, and adopting the new.

In the first place, pupils are fitted for the Grammar Schools in much less time than formerly. Until recently the average age of those admitted to the Grammar Schools was not less than eleven years, while those admitted last July averaged less than ten years. It is expected that the average age hereafter will not be far from nine years.

This is certainly a gain provided the pupils are not overworked, and provided also the work be as thorough as formerly. My own opinion is that no valid objection can be based, either on the ground of overtasking the pupils, or on their want of thoroughness. As to the latter consideration, it seems abundantly proved that seldom have classes entered the Grammar Schools better prepared, in all respects, for the work of that grade, than the class which was admitted last July.

And this leads me to speak briefly of the primary instruction somewhat in detail.

Reading and spelling, which form so important a part of the child's work in this grade of schools, are generally well taught. Doubtless as great diversities exist here as in other branches of study; still good intelligent teaching is the rule, and a lifeless, mechanical method is the exception.

Of the various theories of teaching reading to beginners, we have, until within a few years, used the system of teaching first the names of the letters and then combining them into words. This method of teaching has now few defenders, and in fact is almost universally abandoned by the best teachers. The weakness of it is, that it overlooks the fact that in reading we use the *powers* or elementary sounds, and do not make use of the *names* of the letters at all. To ignore the powers of the letters, then, in teaching reading to beginners, is manifestly unsound and unphilosophical. The regulations require that the elementary sounds and the names of the letters shall be taught, and the results of my observation lead me to the opinion that the best work is done where both are united. We must have the *powers* of the letters, for reading is simply a repetition or combination of these; and we also need the names of the letters, because it is desirable that the child should begin spelling early in his course.

I think it an excellent plan to begin with both the *powers* and *names*, always remembering, however, that the child, in his effort to master new words in reading, is to rely upon the elementary sounds of the letters. This is a matter of great importance, for just here is seen the utility of teaching the powers of the letters.

Between these two methods — the old and the new — the advantages are manifestly with the latter; and yet some of our teachers have not met the requirements of the regulations upon this subject, and hence a want of uniformity exists in our schools. I trust that it will soon be found that every teacher, who has the instruction of the youngest children in the schools, is ready to adopt a system which has proved so successful wherever it has been faithfully tried.

We have used Dr. Leigh's phonetic system in the Training School another year, and the results there have been excellent. This system has been tried most thoroughly and satisfactorily in Boston during the last few years, and it has steadily won its way

against all opposition. It is now taught in eleven districts and in upwards of thirty schools ; and the Superintendent has recently recommended that its use, hereafter, be obligatory, throughout the city. Still, notwithstanding all that can be said in favor of the system, I hesitate, at present, to urge its general adoption in our schools. By appointments made from time to time, we are now securing teachers who understand this system, and who are thoroughly in sympathy with it; and, as their number increases, doubtless the time will soon come when a positive gain will result from its introduction.

The subject of *number* is well taught throughout the Primary School course.

Is it possible that but a short time since children were not unfrequently kept in the schools three years before they received anything like systematic instruction in number ?

Now intelligent and skillful instruction dates from the time the child enters the school. Abstract tables are, to be sure, reserved for a time, as they ought to be ; but the numeral frame, pictures, objects of various kinds, and concrete examples, are used to give the child an intelligent idea of numbers within his comprehension, and thus to prepare him for the more abstract work which is to follow. How, formerly, did either teacher or pupil endure the absence of all slates from the school-room ? How much, in almost every direction, has been gained by their introduction ? It certainly is strange we did not have them earlier. Now the degree of skill attained in the use of the pencil is, in almost every instance, entirely satisfactory, and, in some cases, quite remarkable. There are now classes in these schools in which the proficiency shown in making figures, in writing, or other slate work, would do no discredit to a fourth class of a Grammar School.

I am satisfied that the Plan of Study should be so amended as to introduce writing somewhat earlier than at present. Printing has its place, I think, — although many doubt the expediency of using it at all, — still the change from printing to writing should be made quite early in the course. Many of our teachers have already accepted this theory and begin writing much before the time prescribed in the programme.

I presume most of the instructors will agree with me in saying

that the results in drawing are not entirely satisfactory; still, I see no grounds for discouragement, even in this branch of study.

The most marked instances of failure to comply with the requirements of the programme of study are seen in the case of physical exercises and oral instructions. Many of the most efficient teachers have met these subjects with the same skill and success which they have brought to other branches of the course; but others — and I fear these constitute a majority — have failed to meet the requirements in this direction.

More careful attention will be given to the elementary sounds of the letters, drawing, physical exercises, music, and oral instruction, whenever by examinations, formal or otherwise, teachers shall be encouraged to produce definite results in these several departments; for nothing is more certain, than that the character of the examinations does, in the long run, determine the character of the instruction.

I believe I have made myself well acquainted with the work of the Primary Schools during the last year, and the conclusion I have reached is, that they are excellent, that they are constantly improving, and that they are worthy of all confidence.

## Grammar Schools.

The average number of pupils belonging to these schools during the year was 2,855; the average daily attendance was 2,636; the per cent. of attendance was 92.3.

The number of pupils belonging January 1, 1872, was 3,171, — an increase for the year of 184.

The following table will show the percentage of pupils belonging to the different classes in these schools at the close of the year: —

| | |
|---|---|
| First Class | .058 |
| Second " | .091 |
| Third " | .138 |
| Fourth " | .211 |
| Fifth " | .221 |
| Sixth " | .28 |

Thus it will be seen that but a very small percentage of the pupils who enter the Grammar Schools complete the course, or

even reach the second class; and yet our experience in this direction is not unlike that of other cities and towns.

So far as regards our ability to prevent this very undesirable result, we are for the most part helpless. Parents will take their children from the schools whenever they please, and they make the absence long or short, temporary or permanent, as seems to them best. Nevertheless, it is important to bring every possible influence to bear to prevent the withdrawal of children from the schools. And as a means of accomplishing something in this direction, I suggest the propriety of hereafter granting diplomas to pupils who finish the prescribed course of study in the Grammar Schools.

In this, as in other things, we are glad to learn from the experience of others; and the undoubted success which has attended the adoption of the diploma system in other cities and towns, should commend it to us. It would have some influence in retaining in the schools till the completion of the course some who would otherwise leave much earlier.

After four years of trial in Boston, the Superintendent thus speaks of it: "This diploma system is an undoubted success. Its operation is highly beneficial in more respects than one. While its attainment is an object of ambition in the eyes of all pupils, it is not a competitive prize, like the discarded medal, within the reach of only a limited and fixed number, and consequently tending inevitably to overstimulate those pupils who least need such a spur, and at the same time to dishearten those who need encouragement."

I trust you will deem this subject worthy of your consideration.

In considering the number of pupils now in the Grammar Schools, as well as the rapid increase in the future which may safely be predicted, I am prepared to express the opinion that the time has come when it is expedient to create the grade of submaster in this department. These schools have gone on so quietly under the control of able masters of long experience, that we have not heretofore felt the necessity for the change now suggested. But the schools are now large. One of them numbers 609 pupils, another 625. The difficulty attending the management increases in a direct ratio, if not in a geometrical ratio,

with the size of the school; and hence we shall find that whenever the present principals are obliged to leave their work either temporarily or permanently, it will be difficult to find those willing and able to take upon themselves the care and responsibility of these positions.

With such a change in the corps of instructors in the Grammar Schools, we should be well prepared for a step which I have long regarded as a most important one, namely, placing the Primary Schools under the care of the masters of the Grammar Schools.

I believe in the general excellence of our Grammar Schools, I think I see most evident signs of progress in the character of the instruction. For myself, I believe in thoroughness, and thoroughness which comes from a reasonable amount of hard, patient drilling. And yet I have endeavored by every means in my power, — by the character of my examinations, by suggestions, by private conversations, by remarks in meetings of teachers which I have held; in these, and in other ways, I have endeavored, so far as possible, to eliminate from the instruction useless technicalities and meaningless rote-work. I think something has been accomplished. I like to feel that the instruction is better than ever before — broader, more practical, more intelligent. In the use of text-books there is now less to complain of than formerly. We aim to make text-books "servants, not masters."

To specify a few particulars in which there is evidence of improvement: classes have not unfrequently seemed to be memorizing Colburn's First Lessons, without at all comprehending the fact that they were dealing with processes involving mathematical principles. Much of this has been changed.

In written arithmetic principles have been clearly taught by the aid of examples not too difficult; while in almost every instance which has come under my observation, the definition and rule, if taught at all, have been taught after the pupil had become somewhat familiar with processes and principles. These are certainly signs of progress.

In grammar — a subject upon which so much is said in these latter days — teachers use the text-book, but do not, so much as formerly, waste time and strength in memorizing useless techni-

calities. They accept the doctrine, that to enable the pupil to "speak and write the English language correctly," he must have some practice in correct speaking and writing. And hence instruction in synthesis is not regarded as less important than in analysis.

In geography we certainly make a better beginning than formerly. "Our World" — the text-book in the fifth and sixth classes — has sometimes suffered, — I am not willing to say how badly it has suffered at the hands of unskillful teachers; but the results are now better. Explanations and familiar illustrations, in connection with the reading of the lessons, precede the hour of study; while in the recitation the pupil is encouraged to give the idea in his own language rather than to attempt to recite long and, to him, unmeaning paragraphs from the book.

I think the teachers will agree with me in saying that the instruction in reading has not been generally satisfactory. I have already urged upon the teachers the importance of preparing themselves for better work in this important branch, and of striving the coming year to make the instruction more successful. I trust we shall make a decided gain in this direction in every grade of our schools.

The introduction of sentence-writing into every class of the Grammar Schools, as mentioned in my last Report, has proved a most important addition to the course of study. This work is now well systematized, and is reasonably successful.

The following is a rough outline of what is expected to be taught in the different classes: —

Sixth Class. — Write sentences consisting of monosyllables and other simple words; also sentences containing the names of the days of the week and of the months.

Fifth Class. — Construct sentences containing monosyllables of like pronunciation, but of different spelling; also sentences containing dates, holidays, and proper names of persons and places.

Fourth Class. — Practice letter-writing; and be able to use honorary and professional titles, abbreviations, and capital letters.

Third Class. — Write sentences illustrating the forms of any noun, pronoun, verb, adjective, or adverb.

Second Class. — Write practical business forms, such as letters, bills, receipts, promissory notes, etc.

First Class. — Continue sentence-making, and write short compositions on familiar subjects.

Hooker's " Child's Book of Nature " is, in general, well taught, and proves a success.

### High School.

The average whole number of pupils belonging to this school during the year was 300; the average attendance was 288; the per cent. of attendance was 95.9. The number of pupils reported as belonging to the school, January 1, 1872, was 321, an increase for the year of 41. This is a large increase, and speaks well for the confidence of the community in this school, — a school in which the citizens have always felt a just pride.

It can safely be predicted that the number of pupils at the beginning of the next school year will far exceed that of any former time, and, as has been intimated elsewhere, will render some changes in the building necessary in order that there may be suitable accommodations for the school.

The general condition of the High School is so well known that I do not feel called upon to speak, at length, of the work it is doing. It is sufficient to say that the school is fully sustaining its high reputation for excellence in every department — classical, English, and scientific.

### Training School.

This school has now been in successful operation about two years, and has graduated two classes. Nineteen of the teachers now employed in the city have been members of this school; and I also find that in addition to these, six have had instruction and practice in the Boston Training School. Nearly one third of our teachers are graduates either of Normal or Training Schools.

I have but little to say at this time upon the subject of the Training School. I advocated its establishment, and have watched its progress with the greatest interest. I believed, at the outset, that it was demanded. I regarded its establishment as legitimate, wise, and proper.

I accepted the conclusions reached by the able sub-committee who devised the plan upon which the school has been conducted.

In common with all who gave careful attention to the subject, I hoped for important results from it. I expected it would have a direct influence in raising the standard of the other schools in the city, especially the Primary Schools. I anticipated that it would enable the graduates of the High School to qualify themselves in some measure for the work of teaching, provided they had an aptness to teach; and, what is not less important, I hoped it might be the means of bringing to the notice of committees such persons as possess the necessary qualifications for instructors in order that appointments might hereafter be less a matter of guess-work than formerly.

I wish to express the opinion that we are realizing these results in their full measure.

Many did fear that the primary department of the school might suffer by the introduction of the new order of things, but such fears have been proved to be groundless, for certainly this department of the school now ranks second to no school of similar grade in the city.

Doubtless some misapprehension exists in the community upon the subject of the Training School, especially as regards the character of its work, the extra expenses involved, and other matters of equal importance; but as this misapprehension exists, notwithstanding the fact that plain and explicit statements have more than once been made, it would not be a hopeful theme to dwell upon at this time.

Objections have sometimes been urged to this school, but generally, whatever the form in which they are presented, they show that the real objection is based on economical grounds. The feeling on the part of some is that it is unwise to expend twelve hundred dollars to qualify teachers for positions in our schools.

The argument upon which this objection rests takes either one or the other of two forms: it is either claimed that young ladies just leaving the High School are abundantly qualified for positions as teachers, and hence the Training School is a useless appendage to our system; or else it is asserted that the claims of our High School graduates should be entirely ignored, and that we should go into the market and secure experienced teachers.

As to the first point, but little need be said. Experience has abundantly proved that a young lady fresh from the High School

is not so well qualified to take charge of a school as after a year spent in familiarizing herself with the methods of instruction, and the general work which she is hereafter to do. She must serve her apprenticeship somewhere, and both economy, and the best interests of the pupils, demand that she should, so far as possible, do this before assuming the responsibilities of a regular appointment.

If we adopt the other course, and go abroad for teachers as we are advised to do, we shall, in a pecuniary point of view, plainly be the losers by it. For, since we pay experienced teachers two hundred dollars more for the first year of service, and one hundred more for the second year, than we do graduates of the Training School, it is evident that the appointment of but *four* such teachers will make a difference to the city of twelve hundred dollars, — just about the annual expense of maintaining the Training School. Now, we have within less than two years appointed *nineteen* teachers from the Training School, and hence it is evident, that by these appointments the city has saved $5,700, or about three times the cost of the school up to the present time.

A fair conclusion, then, is that if we employ the graduates of our High School, we need a Training School to fit them for their work; while on the other hand, if we rely entirely upon experienced teachers from abroad, it will always be at a pecuniary loss to the city.

As I have intimated elsewhere, no question relating to the schools is of greater moment than that of the appointment of teachers. What shall be our policy? In 1870 thirty-two female teachers were appointed; in 1871 twenty-five received appointments. Doubtless more than twenty will annually be needed to fill vacancies that may occur. Now I believe the correct policy in this matter is to appoint graduates of our schools just so far as they have given assurance that they will succeed, and no farther; and for the rest, I believe in using the utmost care in the selection of those who have had successful experience elsewhere.

In leaving this subject, I wish to express the opinion that the Training School is doing more, at the present time, to improve the character of the instruction in our Primary Schools than any other agency whatever.

## Evening Schools.

These schools are conducted on the same plan as in former years, and are a success. They are held two evenings each week, and continue four months. The whole number of pupils belonging the present season is 384 : boys, 264 ; girls, 120. The average attendance from November 1 to January 1, was 211 : boys, 145 ; girls, 66. It will be seen that the attendance has been somewhat larger than at any former time.

These schools are doing a capital work, and may well be regarded as forming a most important part of our school system.

In the practical workings of these schools there is danger that some parents will rely upon them too much, — that is, that they will make them a cover for non-compliance with the provisions of the law requiring the attendance of children upon the day schools. We should always be prompt to rebuke any such tendency as this, and always have parents distinctly understand that the evening schools are not designed to encourage the violation of the law requiring school attendance.

We have had more or less difficulty each year in procuring suitable accommodations for these schools, and sometimes the arrangements have not been satisfactory. But evening schools are now recognized as a part of our system, and their continuance is no longer doubtful ; hence it seems wise to provide suitable accommodations for them.

It is desirable to have rooms set apart for this purpose, and to have them furnished with school desks and chairs.

We often have on hand furniture that has been pronounced unsuitable for the day schools, which would be very serviceable in such a case as this.

A fine room has recently been fitted for the schools in East Cambridge, and it only remains for the first and second police districts to follow so worthy an example.

## Evening Drawing School.

The Reports of last year gave an account of the establishment of an evening school for instruction in mechanical and industrial drawing, and also detailed the general plan upon which it was organized.

The school is again in operation, and is working on the same system as that adopted one year ago. Two classes have been formed, — one composed of those who have had previous instruction, the other of beginners. The whole number belonging to the school up to the present time has been 119; the average attendance, 108.

Most of those who attend this school are men who are thoroughly in earnest, and who are anxious to make the best possible use of their time. Almost every branch of industry in the community is represented, since there are among the pupils carpenters, machinists, engravers, pattern makers, etc.

The hall used by the school, although very desirable in other respects, is too small. Many persons have applied for admission who could not be received on account of the limited accommodations. In view of the fact that this school is likely to be an established institution in this city, it is important that hereafter we have accommodations sufficiently ample for all who wish to avail themselves of the advantages which the school affords.

## Drawing.

With the recent introduction of drawing into the High School, this now becomes a required study in every grade of our schools. We cannot find fault with the results accomplished during the last year, considering the means employed, but we ought to do better. Drawing, as a branch of study, is new to most of our teachers, and, in consequence, they are working under many disadvantages. I know of but one remedy for this, and that is to employ a competent teacher of drawing, who shall give the necessary instruction to teachers, and shall superintend the work in every department throughout the city.

I urged the importance of such an appointment one year ago; with even more confidence I repeat the suggestion now.

I believe now, as I did then, that, in order to give unity and efficiency to the instruction in this subject, a special teacher is not less needed than in the department of music.

## Vocal Music.

In October, 1870, the following order was adopted by your Board: "That hereafter musical instruction in the Primary

Schools shall be given by the regular teachers of these schools, under the superintendence of the singing-master." This order sufficiently indicates the changes in the system of instruction which were at that time made.

I do not hesitate to say that the results have in general been satisfactory, and, in many instances, they have been quite remarkable.

I believe that every teacher who has taken hold of the matter earnestly and faithfully, has met with a reasonable degree of success. I have been interested, in comparing notes with the singing-master, to find that the teachers who obtain the best results in music, are almost invariably those who accomplish most in other branches. As a rule, this will always be so.

In June last, pupils from five different schools were brought before the primary teachers of the city to show what degree of proficiency had been attained. This exhibition — or rather examination — was in presence of the Committee on Music and others. At the close of the exercises, the lamented Dr. Mason, — for so many years Chairman of the Music Committee — expressed himself as in the highest degree gratified with what he had witnessed, saying that he believed the success of the present plan of instruction had been fully demonstrated.

I am also reminded that the same gentleman, after spending several days with the singing-master in a careful examination of the schools, made a verbal report to your Board, in which he expressed his great gratification at what he had seen, and his high appreciation of the results everywhere apparent.

I have thus alluded to the opinions expressed by the late Dr. Mason, because I can furnish you no stronger evidence of the success which has attended the new system of instruction.

I suggest, as a matter worthy of your consideration, whether the time has not come to furnish the schools with music charts. A few school-rooms are already supplied, and wherever this is the case, the results have been such as to indicate that they have been used to good advantage.

In music, as in other branches, it is not a wise economy to withhold pianos or music charts, if, by their use, the work in this department will be more satisfactory.

## Truancy.

From the most reliable information at hand regarding the school population of the city, it seems that there are, on an average, more than two thousand children between five and fifteen years of age who are daily absent from the schools.

It would be useless to attempt to cite all the causes which unite to produce this most unfortunate result. A small percentage of the absence is for good cause, such as sickness and the like; a larger per cent. is chargeable to the indifference, neglect, or parsimony of parents.

Now there are three classes of absentees to which I wish to refer. The first is composed of children employed in manufacturing establishments. It is not now known what the number of these children is, but it is supposed to be quite large.

The law provides "that no child under ten years shall be employed in any manufacturing or mechanical establishment within this Commonwealth, and no child between the age of ten and fifteen shall be so employed, unless he has attended some public or private day school under teachers approved by the School Committee of the place in which such school is kept, at least three months during the year next preceding such employment, . . . . *and no time less than one hundred and twenty half days of actual schooling shall be deemed an equivalent of three months.*"

Another section of the law provides that "any owner, agent, superintendent, or overseer, of any manufacturing or mechanical establishment, who shall knowingly employ, or permit to be employed, any child in violation of the law, and any parent or guardian who allows or consents to such employment, shall for such offense forfeit the sum of fifty dollars."

Now, if we are to attempt to reach these children who are employed unlawfully, it is necessary first to ascertain the number thus employed.

If it be found that the number of children be such as to warrant it, we should at once establish a half-time school, in which the pupils can receive at least the equivalent of the three months required by law.

Exactly upon what plan such a school should be organized, is a matter for future consideration. My own idea is that it is well

to divide the children into two sections, one being in school in the forenoon, the other in the afternoon, and, at the end of three months, have the divisions change places, — the one that has been in school in the forenoon now taking its place in the factory in the forenoon and attending school in the afternoon, and the other making the corresponding change.

This seems to me to be a matter of sufficient importance to call for the appointment of a special Committee to consider the subject, and to devise some plan by which present evils may be remedied.

Another class of absentees is composed of those designated in the statute as "habitual truants, and children wandering about in the streets or public places of the city, having no lawful occupation or business, not attending school, and growing up in ignorance, between the ages of seven and sixteen years." The law which applies to this class of children declares, that "each city and town shall make all needful provisions concerning them, and shall also make all such by-laws respecting such children as shall be most conducive to their welfare, and the good order of such city or town;" and further provides, "that said by-laws shall be approved by the superior court sitting in any county in the Commonwealth."

It does not seem to be quite clear that we have fully complied with the requirements of the law as it now stands. The city did, some years ago, make "needful provisions" for children convicted of truancy, and did also adopt certain "by-laws respecting such children," and these by-laws were approved by the court; but this was in 1853, under the original truant law; and, as the law has been considerably changed by subsequent legislation, it may be proper to raise the question whether we are not now called upon to revise our by-laws, and again submit them to the court for approval. This is, of course, a question for the proper legal authorities to decide.

But be this as it may, there are good reasons, as I believe, for some important changes in the present regulations concerning truants and habitual absentees. I do not think the City Almshouse a suitable place for the reception of such children.

We ought either to avail ourselves of the reformatory institution for truants in some other city, — Lowell for instance, — or

else we should have a similar institution of our own. There are two prominent objects which we hope to gain whenever incorrigible truants are sentenced, namely, the reformation of the children, and the prevention of truancy in the schools. Neither of these objects can best be secured by the present arrangements. Certainly, as regards the latter consideration, I feel sure that the sentencing of five truants to the Lowell institution, would have a more decided influence in preventing truancy than four times the number sent to our City Almshouse.

I fear that, in some districts, at least, we are losing ground in this matter of habitual absenteeism. To be sure, but few are sentenced for truancy. Is it not possible that too few are sentenced? Boys seem to calculate the chances with a good degree of shrewdness. They estimate that, in a majority of cases, truancy will not be proved against them, because they will be successfully shielded by their parents. They also believe that if they absent themselves only one or two half days each week, and then return to school voluntarily, they will escape punishment. They are quite inclined, too, to count the chances of escaping from the Almshouse if they happen to be sent there, since so many, as they well know, have succeeded in doing so before.

I believe we need a radical reform in this matter, and to this end two things are necessary; first, some suitable institution specially provided for those who are sentenced, and secondly, a more prompt and effectual dealing with habitual truancy wherever it occurs.

There is a third class of absentees for whom provision has also been made by statute. It was found that there were many children who were deprived of the privileges of the schools through the vices of their parents, or through orphanage; and hence the Legislature of 1866 passed a law, the first section of which is as follows: "Each of the several cities and towns in this Commonwealth is hereby authorized and empowered to make all needful provisions and arrangements concerning children under sixteen years of age, who, by reason of the neglect, crime, drunkenness, or other vices of parents, or from orphanage, are suffered to be growing up without salutary parental control and education, or in circumstances exposing them to lead idle

and dissolute lives; and may also make all such by-laws and ordinances respecting such children, as shall be deemed most conducive to their welfare, and the good order of such city or town: *provided*, that said by-laws and ordinances shall be approved by the supreme judicial court, or any two justices thereof, and shall not be repugnant to the laws of the Commonwealth."

The remaining sections of the act provide for the execution of the law, the discharge of children who have been committed under it, etc.

It is somewhat remarkable that this law, which applies to so many neglected and unfortunate children among us, has never yet been adopted by this city. There should now be no unnecessary delay in adopting by-laws which shall give us the benefit of this statute.

I can close my Report in no better way than by expressing the hope that we shall, at an early day, adopt such measures as shall be most conducive, not only to the good order of the schools, but also to the highest welfare of that large class of children who are deprived of all salutary influences, and who are in danger of leading "idle and dissolute lives," thus becoming at last a burden upon the community, and a weakness to the State.

Respectfully submitted,

E. B. HALE,

*Superintendent of Public Schools.*

# GOVERNMENT

OF

# THE CITY OF CAMBRIDGE.

1872.

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## MAYOR.

HON. HENRY O. HOUGHTON.

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## ALDERMEN.

WILLIAM CALDWELL,
CHARLES L. HARDING,
JOSEPH A. HOLMES,
EDWARD KENDALL,
CHANDLER R. RANSOM,
SAMUEL SNOW,
DANIEL R. SORTWELL,
WILLIAM L. WHITNEY,
JASON WINNETT,
SAM'L. F. WOODBRIDGE.

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## ALDERMEN, BY WARDS.

Ward I. Aldermen CALDWELL, SNOW, and WHITNEY.
Ward II. Aldermen HARDING and WINNETT.
Ward III. Alderman SORTWELL.
Ward IV. Aldermen HOLMES and KENDALL.
Ward V. Aldermen RANSOM and WOODBRIDGE.

**Clerk.**

JUSTIN A. JACOBS.

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## COMMON COUNCIL.

ALVARO BLODGETT, *President.*

**Ward I.**

JOSHUA G. GOOCH,
THOMAS S. HUCKINS,
THOMAS L. SMITH,
FRANCIS H. WHITMAN.

Ward II.

Alvaro Blodgett, Joseph G. Holt,
James E. Hall, Harrison W. Huguley,
Charles R. Patch.

Ward III.

Knowlton S. Chaffee, George B. Hamlin,
Joseph Cogan, John H. Swiney,
Joseph A. Wellington.

Ward IV.

Levi Hawkes, John L. Porter,
Isaac C. Holmes, John Stone.

Ward V.

Sumner J. Brooks, Francis Ivers.

Clerk.

J. Warren Cotton.

Page.

Harry H. Knights.

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## CITY CLERK.

JUSTIN A. JACOBS.

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## CITY MESSENGER.

Roland Litchfield, Jr.

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## COMMITTEES OF THE CITY COUNCIL.

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### Joint Standing Committees.

ON FINANCE.

The Mayor.

Aldermen.

Chandler R. Ransom,
Charles L. Harding.

Common Council.

The President,
Francis H. Whitman,
Charles R. Patch,
Knowlton S. Chaffee,
Isaac C. Holmes,
Sumner J. Brooks.

ON PUBLIC INSTRUCTION.

| Aldermen. | Common Council. |
|---|---|
| Samuel Snow, | The President, |
| Chandler R. Ransom. | Joseph G. Holt, |
| | George B. Hamlin, |
| | John Stone. |

ON ORDINANCES.

| Aldermen. | Common Council. |
|---|---|
| William L. Whitney, | Joseph G. Holt, |
| Samuel Snow. | Joseph Cogan, |
| | Francis Ivers. |

ON ACCOUNTS.

| Aldermen. | Common Council. |
|---|---|
| Jason Winnett, | Francis H. Whitman, |
| William L. Whitney. | John H. Swiney, |
| | Levi Hawkes. |

ON PUBLIC PROPERTY.

| Aldermen. | Common Council. |
|---|---|
| Joseph A. Holmes, | John H. Swiney, |
| William Caldwell. | Thomas S. Huckins, |
| | John L. Porter. |

ON THE ALMSHOUSE.

| Aldermen. | Common Council. |
|---|---|
| William Caldwell, | Joseph Cogan, |
| Edward Kendall. | Harrison W. Huguley, |
| | Sumner J. Brooks. |

ON ROADS AND BRIDGES.

| Aldermen. | Common Council. |
|---|---|
| Charles L. Harding, | Joshua G. Gooch, |
| Samuel F. Woodbridge. | Isaac C. Holmes, |
| | Joseph A. Wellington. |

ON SEWERS AND DRAINS.

| Aldermen. | Common Council. |
|---|---|
| William L. Whitney, | Francis H. Whitman, |
| Daniel R. Sortwell. | Levi Hawkes, |
| | Knowlton S. Chaffee. |

ON FUEL.

| Aldermen. | Common Council. |
|---|---|
| Edward Kendall, | James E. Hall, |
| Charles L. Harding. | George B. Hamlin, |
| | Thomas L. Smith. |

ON LAMPS.

| Aldermen. | Common Council. |
|---|---|
| Daniel R. Sortwell, | Joshua G. Gooch, |
| Edward Kendall. | Charles R. Patch, |
| | Levi Hawkes. |

ON WATERING STREETS.

| Aldermen. | Common Council. |
|---|---|
| Samuel F. Woodbridge, | Thomas L. Smith, |
| Charles L. Harding. | Joseph A. Wellington, |
| | Harrison W. Huguley. |

ON PRINTING.

| Alderman. | Common Council. |
|---|---|
| Jason Winnett. | John Stone, |
| | Charles R. Patch. |

ON THE FIRE DEPARTMENT.

| Aldermen. | Common Council. |
|---|---|
| Daniel R. Sortwell, | James E. Hall, |
| Samuel F. Woodbridge. | John L. Porter, |
| | Thomas L. Smith. |

ON CITY ENGINEERING.

| Aldermen. | Common Council. |
|---|---|
| Samuel Snow, | Francis H. Whitman, |
| Jason Winnett. | Levi Hawkes, |
| | Francis Ivers. |

ON ASSESSORS' DEPARTMENT.

| Alderman. | Common Council. |
|---|---|
| Chandler R. Ransom. | Joseph G. Holt, |
| | Charles R. Patch. |

## Joint Special Committees.

### ON SOLDIERS AND THEIR FAMILIES.

| Aldermen. | Common Council. |
|---|---|
| Edward Kendall, | Charles R. Patch, |
| William Caldwell. | Thomas S. Huckins, |
| | Joseph Cogan, |
| | Levi Hawkes, |
| | Francis Ivers. |

## Standing Committees of the Board of Mayor and Aldermen.

### ON POLICE.

The Mayor, Samuel Snow,
Daniel R. Sortwell, Edward Kendall.

### ON THE FIRE DEPARTMENT.

Daniel R. Sortwell, Samuel F. Woodbridge,
Jason Winnett.

### ON ROADS AND BRIDGES.

Charles L. Harding, Samuel F. Woodbridge,
Daniel R. Sortwell.

### ON SEWERS AND DRAINS.

William L. Whitney, Daniel R. Sortwell,
Edward Kendall.

### ON LICENSES.

William L. Whitney, Jason Winnett,
Daniel R. Sortwell.

### ON HEALTH.

Samuel F. Woodbridge, Joseph A. Holmes,
Daniel R. Sortwell.

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## Standing Committees of the Common Council.

### ON ELECTIONS AND RETURNS.

Sumner J. Brooks, Thomas L. Smith,
Joseph Cogan.

ON BILLS IN THE SECOND READING.

John Stone, George B. Hamlin,
Knowlton S. Chaffee.

ON ENROLLED ORDINANCES.

Joseph G. Holt, John H. Swiney,
Harrison W. Huguley.

**Clerk of Committees.**

J. Warren Cotton.

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Board of Health.

The Mayor and Aldermen.

Health Officers.

Isaac Bradford, Benjamin F. Bridden,
Henry Kinsley.

---

Surveyors of Highways.

The same persons who compose the Board of Mayor and Aldermen.

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Auditor of Accounts.

Justin A. Jacobs.

---

Treasurer.

Joseph Whitney.

---

Assessors.

Levi L. Cushing, Jr.,
Artemas Z. Brown,
Andrew J. Green.

Assistant Assessors.

William Caldwell, Ozias Clark,
Rufus Lamson, Hosea Spencer,
James H. Woodward.

## School Committee.

HENRY O. HOUGHTON, Mayor, *ex officio*, *Chairman.*

**Ward I.**

Andrew P. Peabody, Henry P. Walcott,
Alexander McKenzie.

**Ward II.**

Kinsley Twining, Edward R. Cogswell,
Henry Hinckley.

**Ward III.**

Charles J. McIntire, George H. Miner,
Anson P. Hooker.

**Ward IV.**

Austin J. Coolidge, William A. Munroe,
George R. Leavitt.

**Ward V.**

William A. Herrick, Philip R. Ammidon,
William A. Start.

**Secretary.**

W. W. Wellington.

**Superintendent of Schools.**

Edwin B. Hale.

---

## Overseers of the Poor.

The Mayor, *ex officio*, *Chairman.*

Frederick A. Gerry, Benjamin F. Wyeth,
Curtis Davis, Charles R. Patch,
Edwin H. Blake, Lewis B. Guyer.

**Clerk.**

Benjamin F. Wyeth.

---

## Warden of the Almshouse.

JOSEPH W. AVERILL.

Physician of the Almshouse.

James R. Morse, M. D.

---

Cambridge Cemetery.

Commissioners.

The Mayor, *ex officio.*

Daniel U. Chamberlin, Charles M. Hovey,
John C. Farnham, John Sargent,
George S. Saunders, John M. Tyler.

Superintendent.

James K. Farwell.

---

Trustees of Dana Library.

The Mayor, *ex officio*, *Chairman.*

Alderman. Joseph A. Holmes.

Common Council. Joshua G. Gooch.

Citizens at Large.

William W. Wellington, Charles Deane,
Anson P. Hooker.

Librarian. Miss Caroline F. Orne.

Secretary. J. Warren Cotton.

---

Cambridge Water Board.

The Mayor, and President of the Common Council, *ex officio.*

Chester W. Kingsley, George P. Carter,
Henry L. Eustis, Samuel Slocomb,
J. Warren Merrill (*President*).

Clerk.

Justin A. Jacobs.

---

Trustees of Sinking Fund of Water Loan.

The Mayor, City Treasurer, and the President of the Common Council.

Superintendent of Water Works.

Samuel W. Dudley.

---

Water Registrar.

Abiel F. Fifield.

---

Trustees of the Sanders Temperance Fund.

The Mayor, and President of the Common Council, *ex officio.*

Alderman.

Charles L. Harding.

Common Council.

Sumner J. Brooks,
Isaac C. Holmes.

---

Trustees of the Dowse Institute.

The Mayor, and President of the Common Council, *ex officio.*

Charles Deane, John C. Dodge,
William W. Wellington.

---

Representatives in General Court.

Charles F. Walcott, John McDuffie,
John W. Hammond, Curtis C. Nichols,
Ezra Parmenter.

---

Police Court.

Standing Justice.

John S. Ladd.

Special Justices.

Henry W. Muzzey,

——— ———.

Clerk.

Thomas McIntire.

City Engineer.

JOSIAH G. CHASE.

---

Commissioner on West Boston and Cragie's Bridges.

EZRA PARMENTER.

---

Superintendent of Streets.

GEORGE L. CADE.

---

Superintendent of Lamps.

ROLAND LITCHFIELD.

---

Board of Engineers.

Chief Engineer.

PATRICK H. RAYMOND.

Assistant Engineers.

| | |
|---|---|
| First Assistant . . . . . | Thomas J. Casey. |
| Second Assistant . . . . . | Joseph H. Marvin. |
| Third Assistant . . . . . | Albert Norris. |
| Fourth Assistant . . . . . | Edward F. Belcher. |

Clerk of the Board.

Joseph H. Marvin.

---

Police Department.

Chief of Police.

FORDYCE M. STIMSON.

Captains of Police.

| DISTRICT I. | DISTRICT II. |
|---|---|
| Timothy Ames. | William Twist. |

District III.

John L. Boynton.

Captain of Night Police.

Frederick W. Hagar.

Policemen.

District I.

Thomas D. Cook,
James B. Morse,
Micah W. Cook,
Andrew Sproul,
Andrew G. Smith,
George A. Marston,
Benjamin Kennard,
Moses M. Child,
John S. Milliken,
Leonard Shackford,
Albert D. Cleveland,
Melancthon W. Clark,
John Little,
Charles W. Ingalls,
William Storer,
Frederic B. Pullen,

L. J. Cloyes.

District II.

Benjamin F. Bridden,
Abel A. Hildreth,
George H. Copeland,
Daniel Sherman,
James H. Parks,
George Wood,
George S. Dudley,
Warner W. Simonds,
Thomas H. Lucy,
John Coleman,
Charles J. Marvin,
Simon D. Hiscock,
Rufus S. Downe,
Mark J. Folsom,

Benjamin F. Livingston.

District III.

Amori Benson, Jr.,
William Mullett,
Dennis Corcoran,
Henry Kinsley,
Moses W. Hooper,
Matthew R. Moore,
Amos Jones,
David N. McCleary,
Stephen E. Day,
John Collier.

Special Policemen.

Thomas J. Casey,
Joseph H. Marvin,
Samuel W. Dudley,
Thomas H. Eames,
Edward F. Belcher,
Roland Litchfield,

John Fitzgerald,
Charles L. Russell,
James T. Hall,
William L. Locklin,
G. C. W. Fuller,
F. E. Whitcomb,
Andrew Fogg,
J. L. P. Ackers,
Charles H. Wiggin,
Edward T. Fairfield,
James T. Sell,
William H. Twist,
John H. Marcy,
William McKeever,
Charles W. Day,
Joseph A. Cheney,
Levi F. Babbidge,
B. A. Brown,
John G. Barker,
C. W. Folsom,
Russell L. Towner,
Lucius A. Buck,
James F. Jefferds,
Leonard Bacon,
Joseph W. Averill,
Roland Litchfield, Jr.,
James C. Wilder,
Enoch J. Howlett,
Thomas McIntire,
James K. Farwell,
Luther Hapgood,
Hiram Nevons,
Owen W. Keenan,
James M. Learned,
John F. Murray,
William M. Barrett,
William McDonald,
Moore R. Homer,
George Henderson,
Albert Norris,
George H. Jewett,
James McGovern,
Henry F. Copeland.

**Fire Police.**

George S. Pike,
Moses Ricker,
James T. Hall,
James M. Hilton,
George H. Howard,
W. T. Bryant.

**Truant Officers.**

Isaac Bradford,
John L. Boynton,
Abel A. Hildreth,
Amori Benson, Jr.,
Benjamin F. Bridden,
Moses M. Child,
Thomas D. Cook,
George S. Dudley.

**Constables.**

Isaac Bradford,
William Twist,
John L. Boynton,
John C. Burdakin,
Thomas Work,
Thomas McIntire,
Frederick A. Lull,
George H. Howard,

Clark Moore,
Charles H. Hunnewell,
John Stimpson,
Charles J. Adams,
James F. Jefferds,
Peter Rice,
Augustus P. Griffing,
William McKeever,
Thomas D. Cook,
Charles L. Russell,
Benjamin King,
Henry Kinsley,
Patrick H. Raymond,
Ira Taylor,
Thomas T. Ferguson,
Timothy Ames,
John Cahill.

---

Superintendent of Burial Ground.

Ward 1.

Benjamin F. Wyeth.

---

Undertakers.

Benjamin F. Wyeth,
Roland Litchfield,
John Pear,
Samuel F. Hunt,
Thomas Devens,
William Casey,
C. Henry Lockhart,
Alvah A. Hadley,
Benjamin J. Hoyt,
W. A. Taylor.

---

Auctioneers.

Samuel R. Knights,
John C. Farnham,
John L. Porter,
Reuben A. Adams,
William A. Munroe,
Samuel C. Knights,
Jeremiah W. Coveney,
James C. Wilder.

---

Measurers of Wood and Bark.

James H. Fuller,
John R. Taylor,
Dalphon Osborn,
Francis H. White,
Benjamin J. Hoyt,
J. Henry Wyman,
John F. Brine.

### Fence-Viewers.

George B. Lothrop, Abiel Goss,
Abel Stevens.

---

### Field-Drivers.

Andrew Sproul, Benjamin F. Bridden,
Timothy Ames, John Coleman,
Thomas D. Cook, Amori Benson, Jr.,
James S. Milliken, George A. Marston,
Abel A. Hildreth.

---

### Pound-Keepers.

George W. Ames, Thomas D. Cook,
George A. Marston.

---

### Fish Officers.

Thomas D. Cook, Joseph W. Averill,
Andrew Sproul.

---

### Hay Weighers.

Otis S. Brown, Francis H. White,
William C. Brooks, Joseph Burridge,
B. Franklin Wyeth, John F. Brine,
Francis D. Hardy.

---

### Coal Weighers.

James F. Jefferds, William A. Hunnewell,
Joseph Burridge, J. Henry Wyman,
John F. Brine, William C. Brooks,
Thomas McIntire, Jones Valentine,
Alfred H. Wellington.

Weigher of Boilers and Heavy Machinery.
Joseph Burridge.

---

Weighers.

Joseph W. Averill, James H. Reardon,
Patrick Dunigan, George Soule.

---

Sealer of Weights and Measures.
Enoch J. Howlett.

---

Inspector of Milk.
Enoch J. Howlett.

---

Surveyors of Mechanics' Work.
William S. Barbour, William A. Mason,
John S. Pollard.

---

Inspector of Charcoal Baskets.
Enoch J. Howlett.

---

Measurer of Grain.
Enoch J. Howlett.

---

Ward Officers.

Ward I.

WARDEN.
John C. Farnham.

CLERK.
Robert Torrey.

INSPECTORS.
Joseph Williams,
Edmund Miles,
James B. F. Thomas.

### Ward II.

WARDEN.
Enoch J. Howlett.

CLERK.
Harry B. Winnett.

INSPECTORS.
James W. Pierce.
John M. Davis,
Joseph C. Bruce.

### Ward III.

WARDEN.
Luther L. Parker.

CLERK.
Andrew Fogg.

INSPECTORS.
Otis S. Brown,
John W. Skelly,
Andrew Wilson.

### Ward IV.

WARDEN.
Charles E. Gould.

CLERK.
Joshua S. Sanborn.

INSPECTORS.
Albert J. Sawyer,
Henry L. Caldwell,
Charles L. Russell.

### Ward V.

WARDEN.
J. C. Wellington.

CLERK.
Francis H. White.

INSPECTORS.
F. M. Mason,
Charles L. Fuller,
Jeremiah Murphy.

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